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Short Talks by the Editor



Working for a Future

SKILLED members of the building industry might well pattern their professional lives after the members of the medical profession. A doctor or surgeon goes to college merely to prepare him-

self to begin to learn. At school he gets the ground-work that enables him to profit by future study and

experience. He continues to study and learn all thru his professional life, and the harder he studies, the faster he learns and the more rapidly he gets toward the top.

Apprenticeship in the building trades may well be compared to the college education of the doctor. When the apprenticeship is finished, the builder is prepared to begin to learn. And if he is ambitious he will continue to study and learn all thru his working life. The harder he studies, the more quickly he will learn and the more valuable he will become to himself.

There is plenty of room at the top of every profession and trade; it is only the bottom that is crowded. Constant study, coupled with practical application of the knowledge study brings, will carry the worker ahead of his less ambitious fellows.

The AMERICAN BUILDER is planned to help the ambitious learn. The articles and illustrations are designed to give its readers ideas that others in the industry have found worth while, and instruction in the many operations that are required to design and construct buildings. Careful reading of its columns and study of the illustrations are means by which the members of the building industry will advance.



First-Hand News of Foreign Trade

WILLIAM A. RADFORD, JR., is now in London, England, on a foreign trade mission in the interests of the American Builder that will take him around the world. His first article on the building and trade conditions in Europe will appear in the October American Builder.

Mr. Radford is a trained observer and a versatile human-interest writer. He will see foreign conditions as they affect our advertisers and readers; and he will write from first-hand information. Don't miss this series of articles.

Build for Permanence

WE read much about "amortization" in connection with building projects. "Amortization" is a sinking fund, a certain portion of the cost of a building being set aside to replace the structure when

necessary. In investment building the amount is a fixed overhead expense that must be earned annually, as is the interest on the investment. The more permanent the building, the smaller the amount that is set aside annually. For a building that is expected to last fifty years, 2 per cent of its cost would be set aside, and so on.



Permanent buildings, so called, are the best investment. It is true that they cost a little more, but when the length of service is considered, their annual cost is less.

Contractors would rather put up a "permanent" structure. Better materials lend themselves to better work, and good work is the kind that everyone in the

building industry likes to do.



Home Loan Bank Plan Goes Forward



IN the early part of August the legislation authorizing home loan banks under federal supervision was introduced in the United States Senate. The AMERICAN BUILDER has printed an explanation of this plan to help the building and loan associations finance home builders. As soon as the legislation is enacted and the organization perfected, it is estimated that \$2,000,000,000 will be available to help home builders. This amount will go far toward supplying new homes.

Home Owning Vs. House Renting

BUILDERS HAVE STRONG ARGUMENTS IN FAVOR OF HOME BUILDING

A HOUSE is a place where we eat and sleep; a home is the place where we really live and enjoy living. That expresses the difference between the house rented and the home owned, and supplies the reason why the United States is fast becoming a nation of home owners.

Building is the most satisfactory way of acquiring a home. The design of the house represents the ideas of what a home should be of the person who built the home, or the investment builder's opinion of what will appeal to the greatest number of purchasers.

Buying a home from an individual or an investment builder is not so satisfactory as building, for the home planned and designed by the one who is to live in it represents his ideas and contains the little touches that he wants.

American Homes Are Best in the World

The United States is comparatively a young nation. Therefore its architects can profit and have profited by the development of architectural art in other coun-

tries. American architecture represents what is best in the architecture of older nations, but it excels in providing conveniences that make a house a home—comfortable, efficient and healthful.

In the American home designs will be found efficiency accompanied by comfort, and convenience without the sacrifice of either. Selecting a design for a home is rare fun. Every normal person has an idea of what he wants his home to be. He has seen a feature of another's house that appeals to him; and some other touch in another house that he wants. Unconsciously when he comes to plan a home these ideas come to the front. That is why it is well to consult an architect. The architect can work out the prospective builder's ideas and do it in a practical way.

Contractors Have Strong Arguments for Home Building

These ideas about home building are ones that every contractor, material dealer and architect can use when discussing the subject with prospective clients. The members of the building industry know that building a home is absolutely the best way to acquire one. The prospect often does not fully realize these advantages, but will when they are presented to him.

The shortage in homes everywhere has brought forcibly to the attention of thousands of families the disadvantage of renting. Our cartoonist has put one of them into the illustration on the following page. While this is only one of a great many strong arguments for home building, it hits the vital spot in almost every man's makeup—his pocketbook. Show the prospect where it is to his interest, from a standpoint of dollars and cents, to build and he will build.

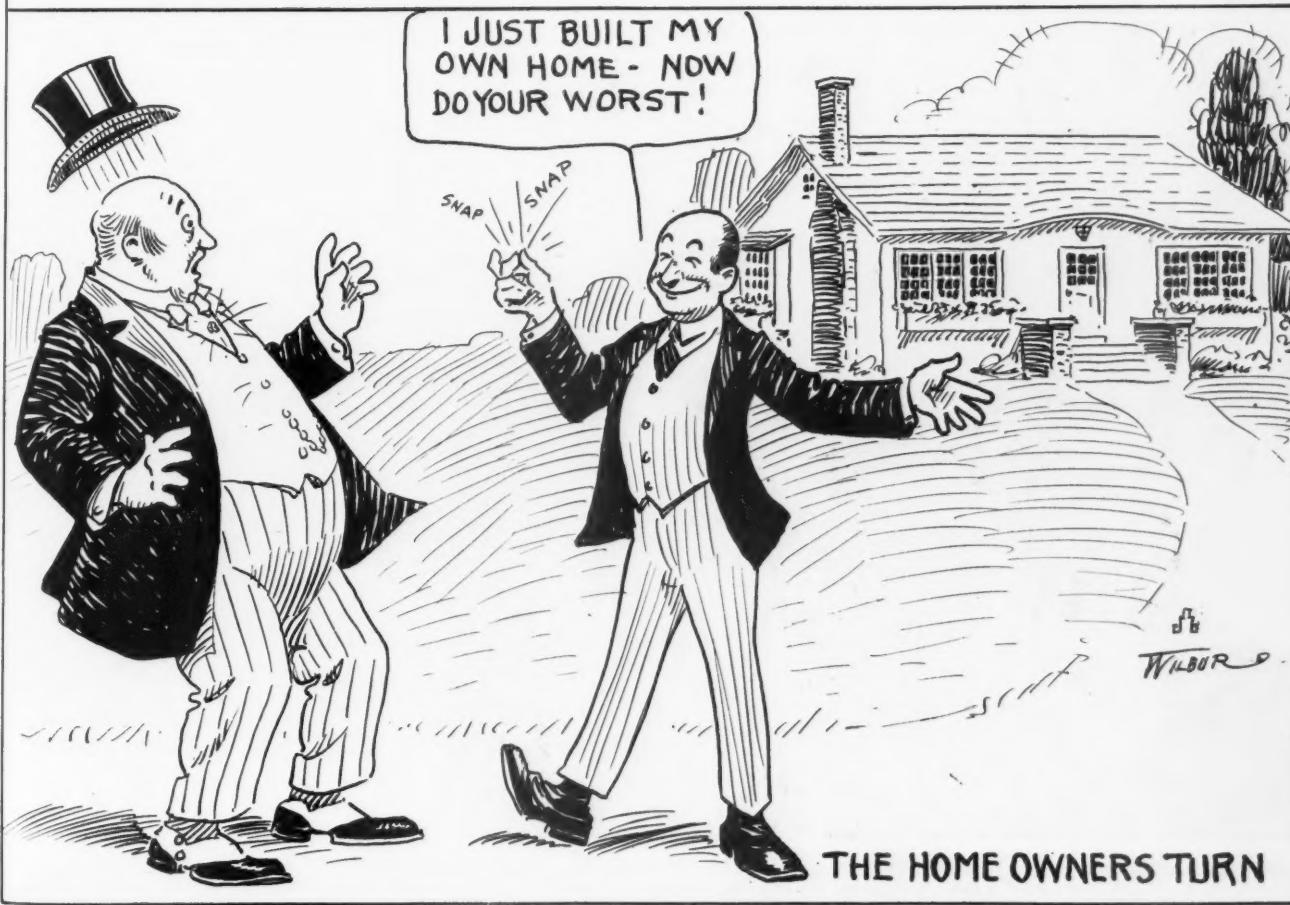
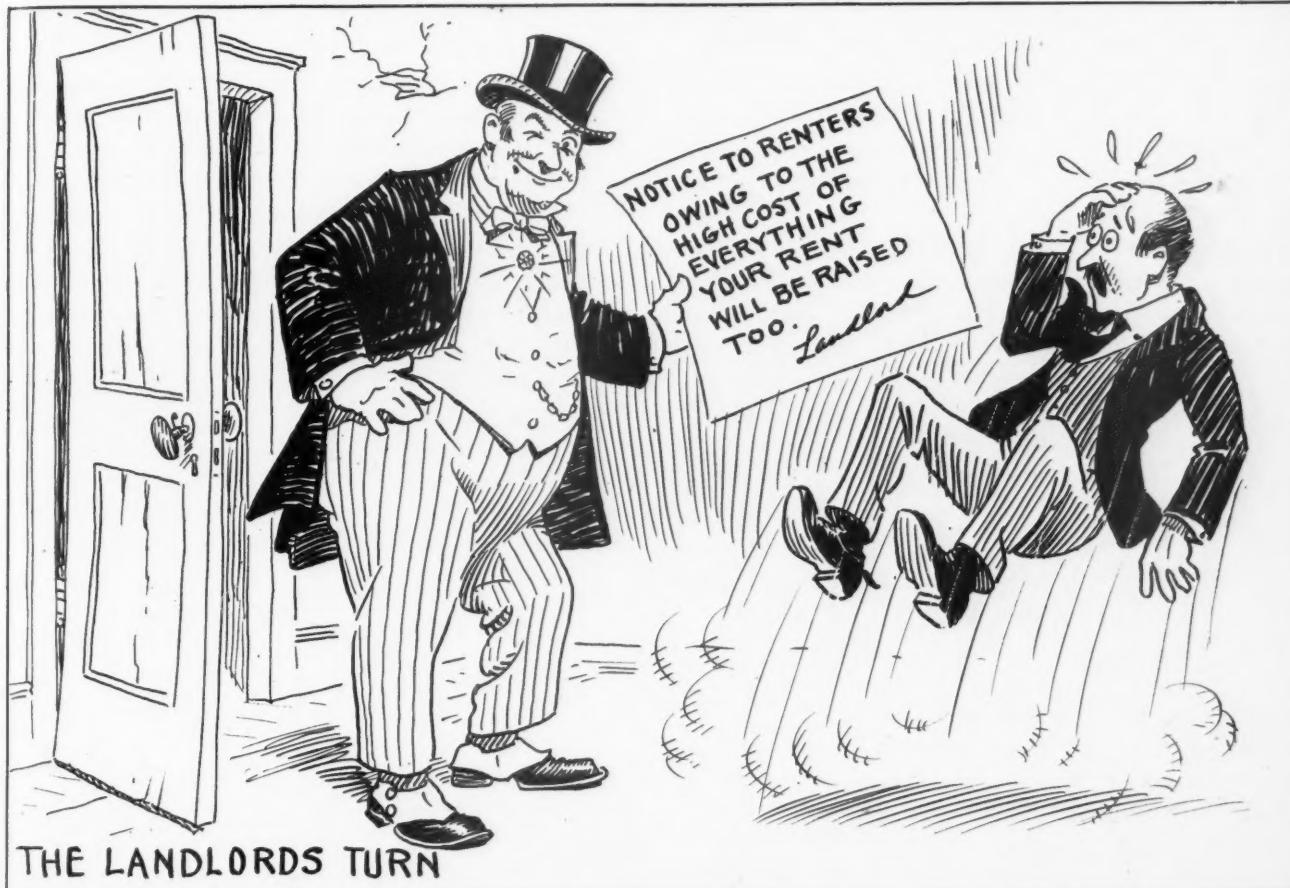


DURING this era of prosperity among builders and everyone connected with the building industry is a good time for everyone to prepare to expand his business. Capital and equipment are the two essentials for larger operation. But the capital is readily forthcoming when a builder is prepared for any sort of a construction job. The moral is: "Be ready."



An Artistic Front of a Remodeled New York Home. The Old House, of the Ordinary Three-Story-and-Basement Type, Was Converted Into a Home of Extraordinary Appearance by the Use of Face Brick, Stucco and the Figurines.

PUTTING ONE OVER



Be True to Your Work, and Your Work Will Be True to You

By Richard M. Van Gaasbeek

SCHOOL OF SCIENCE AND TECHNOLOGY, PRATT INSTITUTE, BROOKLYN, N. Y.

NO truer saying has ever been uttered than that of the founder of Pratt Institute when he said, "Be true to your work and your work will be true to you." And yet so many men fail to appreciate this fact.

Employers are always on the watch for a man who does a better job than has been customary, not merely a more skillful, mechanical job regardless of the length of time taken in performance, but men who understand the basic principles of their trade and can readily solve difficult problems as they are encountered in their daily work. Foremen, superintendents and leaders in their trade are men that know how to do a job rather than the men that actually do the work.

The business of the writer is not only to lay before men in the trade a simple method for acquiring these principles, but to encourage them to grasp the opportunities that are being offered to them at the present time. Now is the time for an awakening of self ambition for self improvement. We are in many ways to blame for the disrespect generally shown to our trade, because too few study to understand the principles involved in their work, or do anything to compel recognition by the mechanical world. We should prove that our trade is one in which there is a chance to display mechanical ability and thereby command the proper respect that it deserves.

Trained Men Lead in Their Professions

The war has shown in clear relief the national need

and worth of men trained to perform organized and executive tasks of size and high importance. Contentment is one thing. Happiness quite another. Contentment is not the state of mind of the ambitious. Because someone was discontented the telephone and telegraph were invented, the instruments that have revolutionized the business world. Others were discontented in our modes of transit and so steam was harnessed and they gave us the steam engine and steam boat. Gasoline has been harnessed and the automobile has become a commercial product and some men will be discontented until the flying machine also becomes commercialized. Electricity has been developed so that it gives us heat, light and power. Sound has been reproduced in the talking machine. The printing press has revolutionized our methods of communicating ideas from one individual to another and made it possible for us to be of better service to each other, and all because some men were discontented, not in the sense that they were unhappy in mind, but because they believed that there was a better way of doing things and they were determined, if possible, to discover the hidden secrets which we now all enjoy and which gave satisfaction to the discoverer. And so, the writer is trying to sow seeds of discontentment among his fellow mechanics in an effort to try and push them ahead; discontent insofar as their knowledge of their trade is concerned.

We must either go back or go ahead. We cannot stand still. Fellow mechanics, check yourself up on your knowledge of your trade. What are the things you don't know? Seek help in discovering some of them. False pride may let the other fellow get ahead of you.

How Roof Framing Is Taught

A course of roof framing has been organized at Pratt Institute for the purpose of studying the steel square, the most useful tool a carpenter carries in his kit if he knows how to use it. Men are continually complaining that they are tired of working to lines that other men have made and therefore think it time that they know how to lay out work also. This course is intended for journeymen mechanics, but not primarily to train roof framers. Plan reading is the last gauge of the mechanic and it is surprising how few mechanics under-



Fig. 1. A Model Roof Laid Out with a Steel Square at the Pratt Institute. The Diagram of the Roof Frame Is Shown on the Blackboard.

stand the language of their trade and can communicate their ideas one to the other. Roof framing is one of the best studies for developing this gift. The framing of a roof as developed on the plan is shown on the blackboard in Figs. 1 and 2—that is, all lines are produced on a level surface. The intersecting lines of the various center lines of the rafters give the necessary bevels at these intersections. In picking up these bevels from the plan, the average mechanic forgets that these bevels must also be applied on the same plane, a level line, and it is very difficult for them at times to understand why these bevels taken from the plan cannot be applied on the pitch

How much supervision do you require? Are you willing to assume responsibility? The compensation that it is possible to receive over and above the minimum wage just referred to, is dependent upon the answer to the above questions which every mechanic should require himself to answer. Working with intelligence and skill so that the least amount of supervision is required and assuming responsibility when it comes will determine the value of services rendered.

Good Workers Are Valuable

A good worker is less valuable than a good executive. The writer can recall working in a shop and

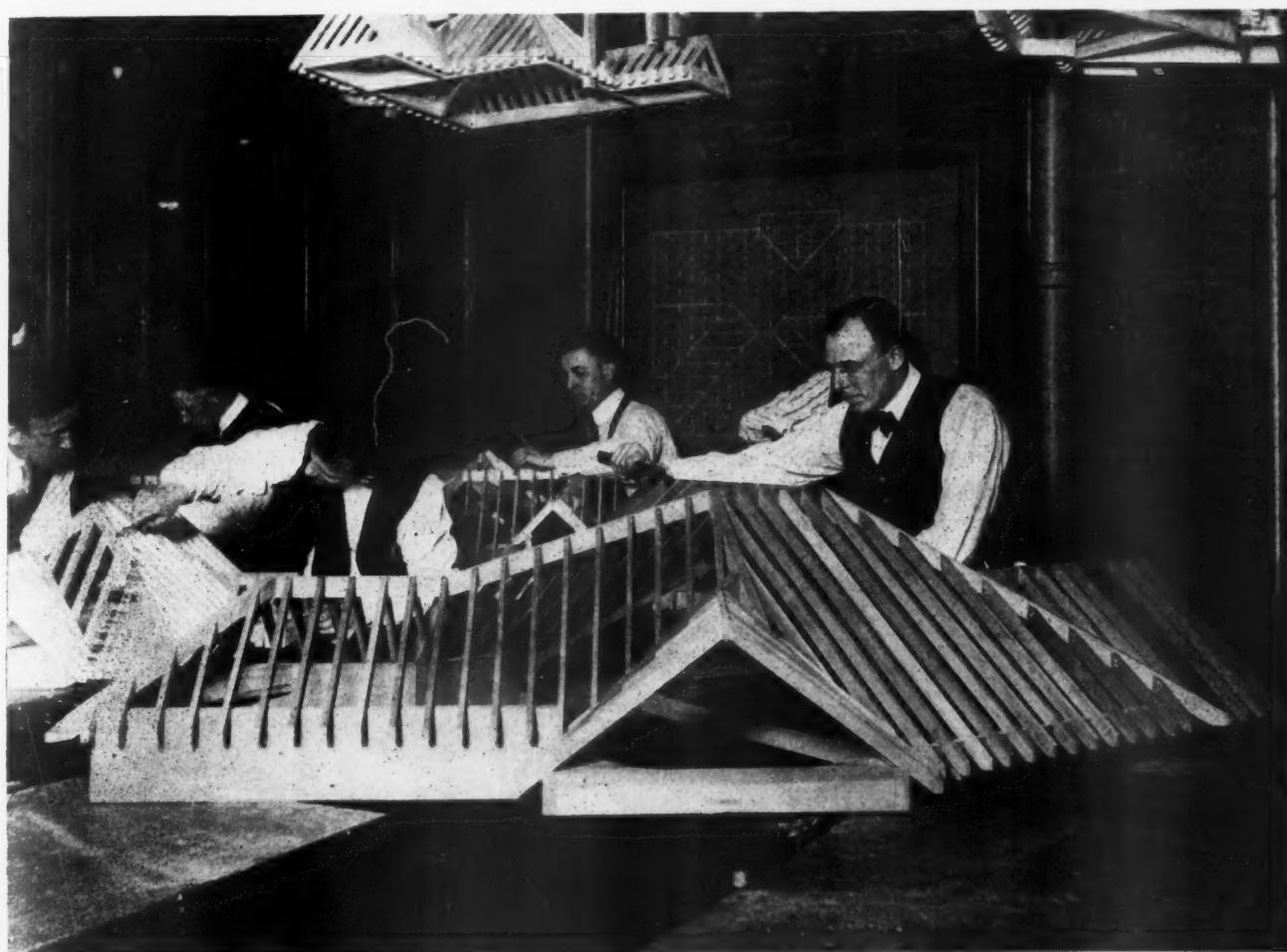


Fig. 2. A Complicated Problem in Roof Framing. Sloping Ridge, Octagon Corner. The Plate on the Left Side Is 3 Feet Higher Than That on the Right. All Rafters Thruout Are Pitched 9 Inches in a Foot.

line. It is a most fascinating and interesting study and this course insures a thoro understanding of the subject. The developing and mitering of rake and level moulding, laying out of hoppers and splayed work, the developing of curved surfaces, laying out various angles and developing required bevels all come within the subject of roof framing and are not questions for the apprentice but for mature journeymen in the trade.

The minimum wage for which a journeyman mechanic should work is fixed, but no individual or organization can fix the maximum amount that he may be paid. Do you work with intelligence and skill?

watching the operation of two moulding machines standing side by side. The operator on the one paid little attention to the adjustments on his machine and was trying to force his stock thru, tugging and pushing, using every atom of vitality he possessed in trying to get his stock to feed into the machine, even going so far as to nail a furring strip on the floor similar to the runway for leading animals up an incline that he might get a better foot hold as he attempted to force his machine. The other operator running a similar pattern of moulding machine studied the adjustments, saw that the springs, feed rolls, pressure bar, etc., were working properly so that all he need to do was

simply to feed his stock into the machine, taking it easy as the stock passed thru, thus accomplishing more work, a better grade of work with far less exertion. Which of the two men was worth the most money and yet both doing the same class of work? The one might be classed as a worker, he worked hard and used up his strength without accomplishing much. The other might be classed as an executive, he used intelligence and skill in adjusting his machine so that his machine worked for him instead of letting the machine work him, and altho this particular job was not of an executive nature, the way in which he handled it soon led to something better.

On another job the contractor had sublet the contract for the constructing and installing of the stairways for the building. It was practically completed excepting the stairs and for some reason the subcontractor was unable to live up to his contract. This meant tying up considerable money and possible embarrassment to the contractor if he could not turn the building over to the owners on time and get his money. One of the carpenters on the job suggested that he build the stairs himself. He could lay them out and if given the men they would be up in a short time. It is needless to say that the offer was accepted, he was given as many men as he needed, the stairs were made and installed, and within a short time the contractor was able to turn the building over to the owners and complete his contract within the specified time. After completing the job successfully, this carpenter was

made general superintendent, his salary doubled and he was given an automobile to ride around in from job to job, all because he possessed certain information that the other men on the job did not and he was ready for the opportunity.

Carpenters, train yourself for leadership, increase your value by studying up on the duties of men engaged in lines connected with your own, for if you are to be successful you must have a comprehensive, organized and thoro working knowledge of the various lines of work done under your direction.

You may belong to the worker class but how long you remain in that class depends upon yourself. The ambitious man looks upon the worker class as the training school in which he can prepare for his life work, advancing to the better paid classes as he progresses in his training.

Again, it is an easy matter to do the same thing over and over again in the same old way. Carpenters are so used to working to straight lines, plumb and level lines, that the least deviation from them confuses them and makes them helpless.

Knowledge of Fundamentals Necessary

The general construction of a building would be rather peculiar if it were not constructed upon the fundamental level and plumb lines, but the average person does not care to live in a packing box and so the architect introduced other lines, making our homes not only habitable but also attractive to the eye. So the technical trade schools offer a training shop,

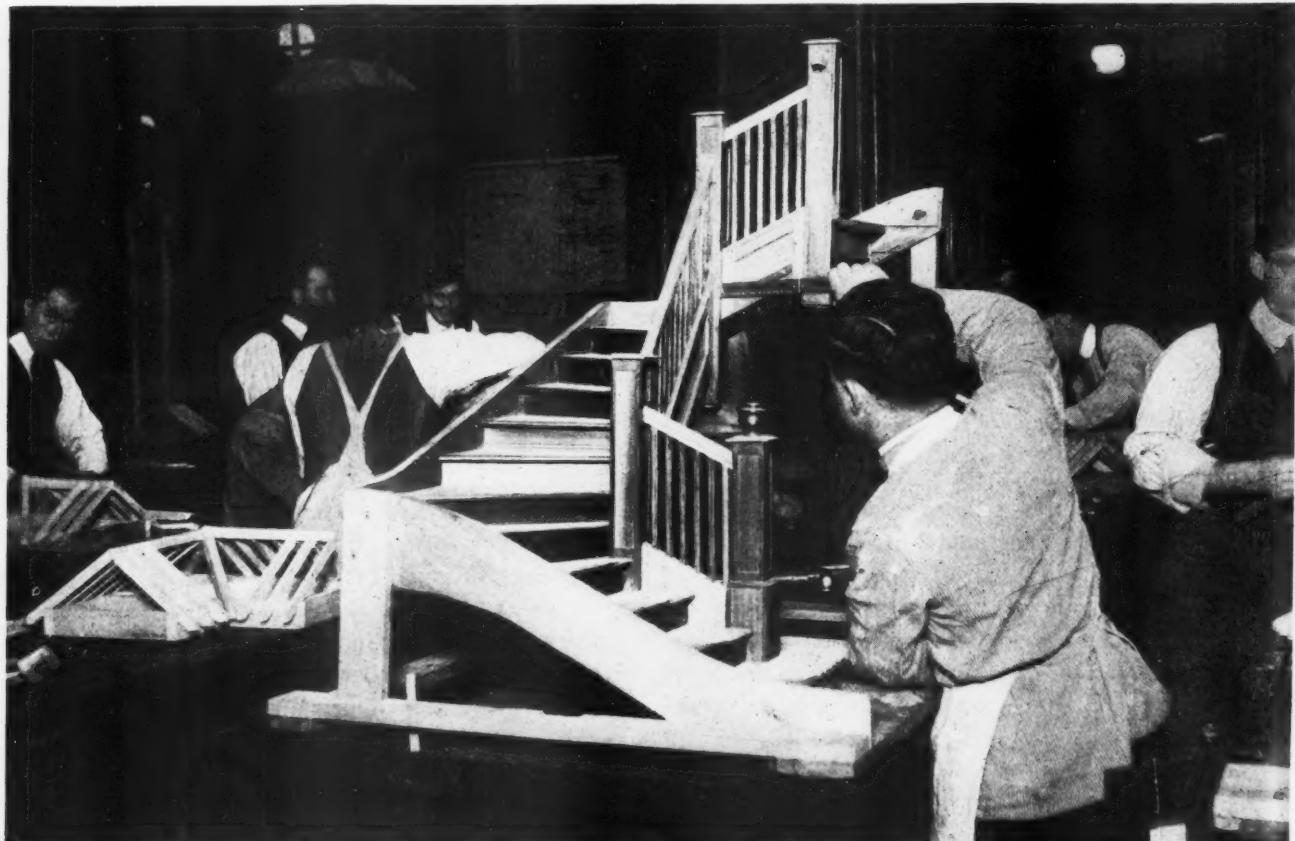


Fig. 3. A Practical Problem in Stair Building. How the Students at Pratt Institute Are Taught to Apply in Practice the Theories They Are Taught.

or as the writer looks at it, a laboratory not for the purpose of developing physical strength; for men can get all they want of that during the day at their daily work; but a laboratory for studying the fundamental principles of the trade where men fashion and shape pieces of stock, testing some formula in the form of a blue print and in the testing of the formula discover an underlying principle.

Two years ago a course in Wooden Boat and Shipbuilding was organized for the purpose of assisting house carpenters who were then transferring in large numbers from the building trades to the shipbuilding industry. This course has proved most popular and is as popular today as when it was first organized. Carpenters having completed the course and again returning to the building trades report no regrets for having spent the time in studying the principles of this trade. The methods employed by the boat builders in developing curved and irregular surfaces are a revelation to any carpenter and will greatly aid them in solving many problems encountered in practicing their trade.

While the building of large wooden ships has been discontinued as was to be expected, there will be plenty of work for years to come in the building of smaller craft so that this course promises to be a permanent one. The practical work consists of taking up molds from mold loft floor, lining scantling from molds, construction of center frame, including stem, keel and stern, cutting rabbets, erecting transverse frames, scaling, beveling and installing planking and longitudinals, caulking (light and heavy work), installation of longitudinal clamps, deck framing and methods of laying decks and plan reading.

The manual work Figure 4, includes the building of a complete model of a 24-foot power boat. Many of the fundamental principles are in common for both boat and shipbuilding trades and this type of boat was selected for convenience in the shop and because it embodies more of the elements of construction than would be found in many other designs. Thruout the course short practical talks are given by men from local ship and boat yards, thus correlating the work of the school with that of the industry.

In these days special training is what counts and the writer is encouraging men to prepare in spare time for bigger things and to have them make the most of their opportunities and of themselves. Don't get the notion that an employer can't get along without you, but rather take an interest in your work, thus putting your employer in the position where he himself thinks



Fig. 4. A Practical Problem in Boat Building Which Exemplifies the Fundamental Principles That Are in Common Use in Both Boat and Shipbuilding, Being Demonstrated to the Students at Pratt Institute, Brooklyn, N. Y.

that he can't get along without you. Mark the distinction. The writer is at the service of his fellow mechanics and would be glad to hear from them, either thru the mail, or by a personal call for an inspection of the shop.



"Build Now, Prices Won't Come Down" Says Wharton Clay

The following statement given out in a recent interview with Wharton Clay, Commissioner of the Associated Metal Lath Manufacturers, of Chicago, covers very fully the present building situation and should be of interest to all contractors and builders.

"Those who are holding off from building at the present time will be sadly left. The general public already understands that prices on building materials are not going to be any lower. The trade associations now have the problem of convincing the public that the number of mechanics available in the United States for building construction is far below the normal requirements. This is due to many reasons, chief of which are the natural death rate in the past few years, with practically no addition of apprentices to fill up the depleted rank. This was particularly intensified by the influenza epidemic of last year. The death rate among building mechanics being very high, due to the exposed conditions under which they are required to work.

"Further, thousands have left the building trade and gone into other occupations which have offered them steady employment, and hundreds will never return.

"It is entirely possible that the great building boom will bring a shortage of material, and the difficulty of transportation will be greatly magnified, and on the whole conditions are better for the economical construction of buildings at the present time than they are likely to be for many years to come."



NEVER in the history of the building industry was there such a demand for homes of the better class. Even at pre-war prices, the homes that are being built now would cost more than the average a few years ago. The bugaboo of high prices has not interfered with the determination of thousands of Americans to have homes of their own.

Installing Weather Strips Profitable Fall Work—How to Make Windows and Doors Weather-Tight

By J. D. EDDY

THE advanced prices of fuel of all kinds and the warning of the government and the coal mine operators that there is danger of a shortage during the coming winter, bring forcibly to the attention of every building owner the fact that tight buildings are the more easily and economically heated. Far-sighted building owners already have realized the folly of trying to heat their buildings economically when the openings around the window sashes and doors are so large that a great amount of cold air is admitted, and have closed the cracks with weather strips.

Tests made by weather strip manufacturers have disclosed that there is a difference of some ten or more degrees in the temperature at the doors and windows and in the parts of the rooms where there are no openings thru the outside walls. This difference in temperatures, of course, is greater or less according to the tightness of the windows, or the doors, or both. By the application of weather strips, which now are so constructed that the openings can be made practically air tight, the temperature can be made the same in all parts of the building.

Profitable Work for Builders

Because the efficiency of weather strips has been proven and because building owners will welcome

a means of cutting their fuel bills, the work of installing weather strips this fall will keep contractors and builders exceptionally busy. And this activity, coming as it does at a time when the seasons' building operations are beginning to slacken, will mean profitable off-season business for the members of the building industry.

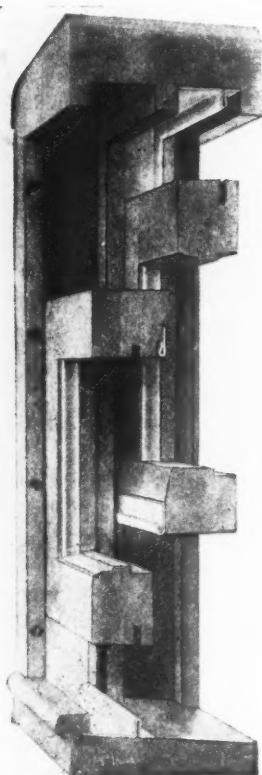
There are few buildings now constructed in which weather strips are not installed at the time they are built. Many of the older structures, however, have windows and doors that have become shrunk and warped to such an extent that they let in a great deal of air and dust. The new building is much

easier for the builder to install weather strips in, but the older buildings are the ones that need them most.

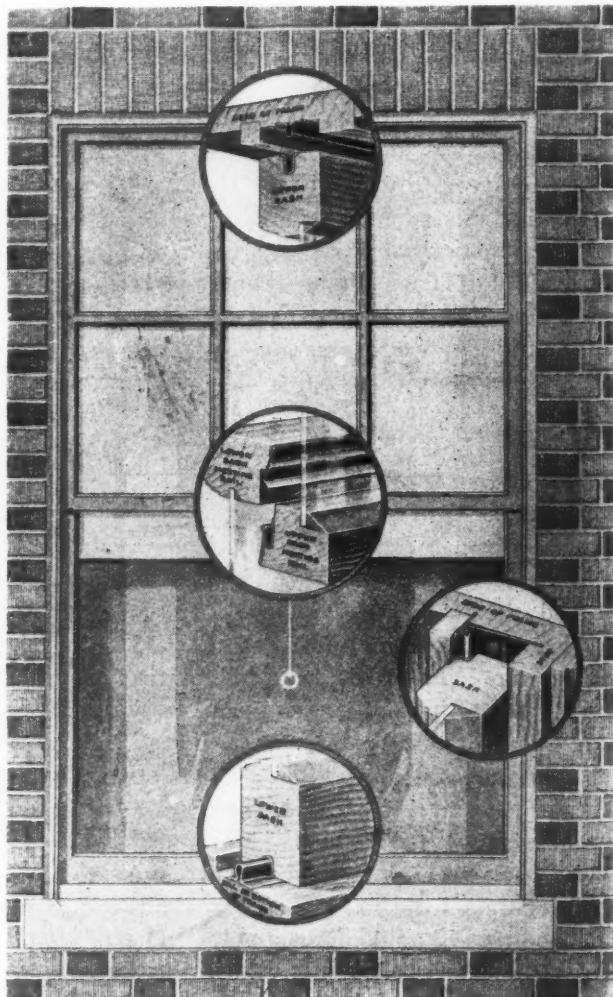
There are many different designs of weather strips, of both metal and wood. All are useful for the simple reason that each will keep out both air and dust. Some are more elaborate in construction and require more work to put them in. Also some are more costly than others. The selection of the type of weather strip to be installed depends on the ideas of the building owner and the amount he is willing to expend for the materials themselves and for the work of installing them. In fact, they range from the wooden strip, with a felt attached, to the double metal channel bar and hook.

How to Install Weather Strips

The operation of installing weather strips of all kinds is so closely allied to the work a carpenter does in framing and hanging windows and doors that it requires little experience for him to become



Cross-Section of Window, Showing Application of Weather Strip.



Double Hung Windows, the Insets Showing the Application of Weather Strips on Sashes and Frame.

How to Install Weather Strips

61

addept at it. While the instructions that follow may not apply to every kind of weather strip, they will be of great help to the inexperienced weather strip man.

The meeting rails are the most troublesome part of the work, as it is sometimes impossible to get the two rails to line up properly because the sashes are out of square. A careful examination of the meeting rails must, therefore, be made. See that the upper sash is up tight in place at the top and that the lower sash is all the way down. See if the meeting rails are too thick to let both sash hug the parting strip at both sides. If so, they must be dressed off, for both sash must be made to come close against the parting strip at both sides of the window. Plane a groove in the edge of the meeting rail of the upper sash three-eighths of an inch from the bottom edge. Plane off the part above the groove whatever is necessary to bring the sash close against the parting strip. Plane the same thickness off the bottom edge of the meeting rail of the lower sash, using a $\frac{1}{2}$ -inch rabbet plane. This will give a rabbeted meeting rail, which will make a better contact on the meeting rail strip.

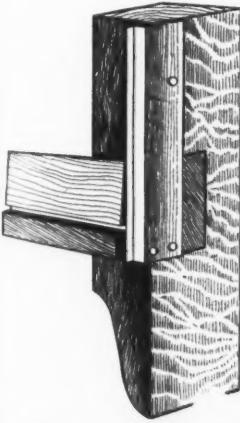


Fig. 1. Showing How the Groove Is Plowed In the Edge of the Meeting Rail of the Upper Sash, $\frac{3}{8}$ Inch from the Bottom Edge.

thickness off the bottom edge of the meeting rail of the lower sash, using a $\frac{1}{2}$ -inch rabbet plane. This will give a rabbeted meeting rail, which will make a better contact on the meeting rail strip.

The First Operations

The next move is to take off the two inside stops. Loosen the sash cords from the sash, pull the weights up as far as they will go and hold them there by driving one or two small nails thru the cord. Do not let the cord run back in the hole with a knot tied in the end. The former method is best because it gives a means of measuring the length of the cord when it is put back in place. Having removed both parting strips, fit the upper sash first and then the lower sash, using your best judgment to get the following results:

The sides of the sash must be parallel with the adjoining jambs and with not less than one-sixteenth inch play on each side. In nearly every case the play can be more than that and still be a perfect job if the sides are parallel with the jambs. This operation must be done in such a way that the meeting rails are not thrown out of line with each other, other-

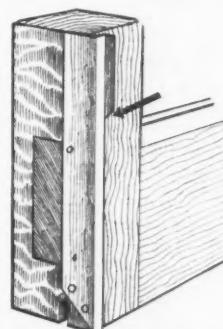
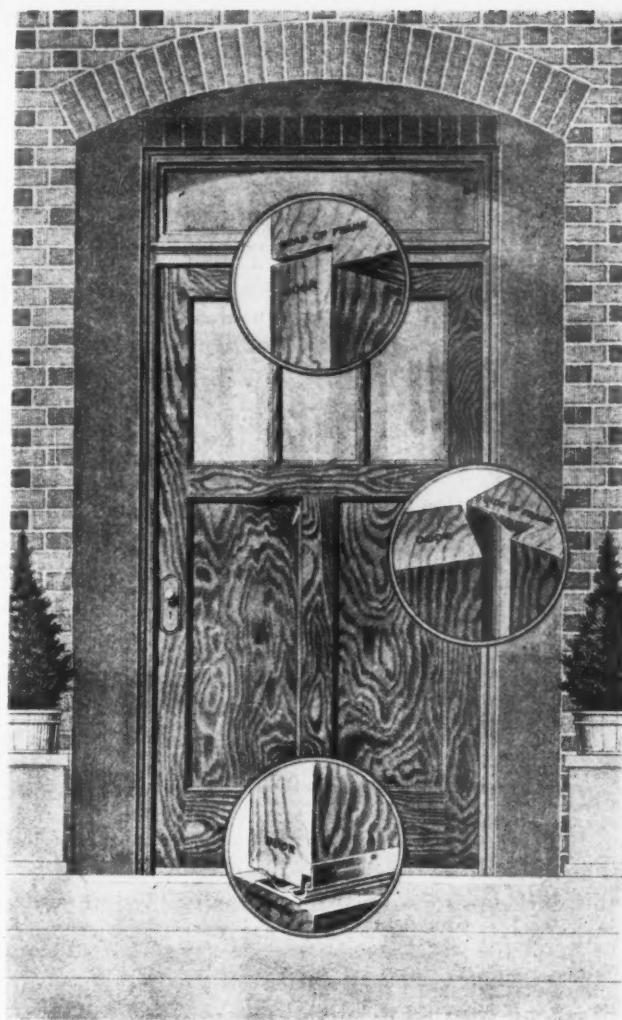


Fig. 2. Showing How the Grooves Are Cut In the Top of the Upper Sash and the Bottom of the Lower Sash.



Door, the Insets Showing the Application of Weather Strips to Frame and at Bottom of Door.

wise the meeting rail weather strips will require extra care to make them air tight. Do not let the top sash get out of position while fitting the meeting rail. It is sometimes a good plan to put in wedges to hold it tight against the head with sides parallel with the jambs. Having fitted the lower sash so that the sides are parallel with the jambs, and meeting rails of the two sash line up as nearly as possible, the bottom of the lower sash must be dressed off to make it fit snugly down to the stool at both corners without tipping to one side.

Edges of Sash Must Be Straight

Straighten the edges of the sash next to the parting rails, being careful not to plane off a wider strip than is necessary, so that it will not show outside of the parting strips. Use a $\frac{1}{2}$ -inch rabbet plane. If it has become necessary to straighten the upper sash next to the parting strips, some stain or paint may be required to cover the raw wood.

If it is found that the stiles or sides of the sash have warped away from the parting strips in the middle and touch it at the top and bottom, it usually is not necessary to straighten the side of the sash, but a straight edge must then be used as a gauge

How to Install Weather Strips

[September, 1919]

in setting the Z-bars or inside strips so as to get them straight and parallel with the parting strips. If the crevice between the edge of the sash and the frame is more than $\frac{1}{8}$ inch on each side, nail a thin strip of wood about three-fourths of an inch wide to the back of the sash on the side next to the parting strip to bring the crevice down to $\frac{1}{8}$ inch or less. The Z-bars will be set over these wood strips.

Where the sash rubs against the parting strips, care should be taken to have both surfaces smooth and free from rough paint. This will make the window slide easier. Both sash now will be in condition to receive the weather strip, except that it may be found that so much has been taken off the bottom of the lower sash that the top sash does not fit up tight at the top when the meeting rails are even and the bottom sash is tight on the sill. If this is the case, then it becomes necessary to pack out behind the strip in the head of the window, or in a few cases it may be necessary to fit a thin strip on top of the upper sash before plowing for the weather strip.

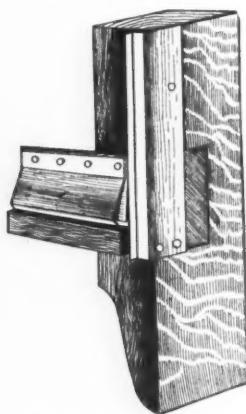


Fig. 3. How the Meeting Rail Strip Is Nailed to the Upper Sash and the Z-Bar Is Attached.

Both sashes are pushed up as far as they will go; it will come exactly at the bottom edge of the meeting rail of the upper sash. Hang the upper sash, nailing the cord thru the knot with a 4-penny nail. Fit the lower parting strips so that they are even. If they are too long cut them off at exactly the center of the meeting rail when the sash is up in place. Pull the sash down and fit the upper parting strips. Remove the parting strips and set them aside in such manner that you will know where they belong. Hang the lower sash and drive a 4-penny nail thru the knot as in the upper sash. Push both sash up as far as they will go.

Putting in the Weather Strip

Take one of the lower parting strips and push it between the sash, being careful to have the Z-bars properly entered in the hollow chambers of the parting strips.

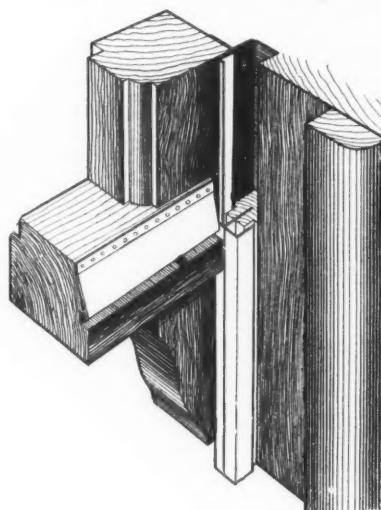


Fig. 5. Showing How the Parting Strips Are Fitted. If They Are Too Long Cut Them Off at Exactly the Center of the Meeting Rail When the Sash Is Up in Place.

Push the parting strip into its slot, and put the one in the other side in the same manner. Pull one of the sash down, being careful at first to see if anything is caught. Pull down the other sash and put in the other parting strip. Move the sash up and down a half dozen times, first the lower and then the upper, until you are sure all the strips have been correctly installed.

Fasten the parting strip with a $\frac{3}{4}$ -inch No. 7 flat-head screw, the screw to go between the frame and the parting strip, acting as a wedge only. The head of the screw will hold the parting strip in place so that it will not be pulled out. Set the screw on the outside of the parting strip so that it will not show from the inside. The screw must be set well into the wood so that the Z-bars on the upper sash will

pass over it freely and without danger of being caught and bent.

Put in the head strip and the sill strip. To locate the head and sill strips in line with the groove in the sash it is best to proceed as follows:

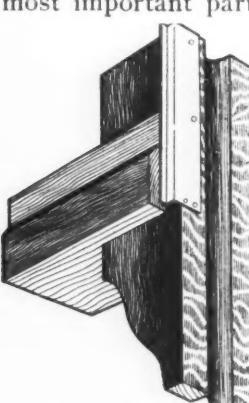


Fig. 4. There Should Be Just Enough Room Between the Z-Bars and the Sash for the Flange of the Parting Strip to Slide Easily.

the lower sash, or, in other words, where the side stiles of the sash run above the meeting rail, the small lip of the Z-bars must be cut off so that when

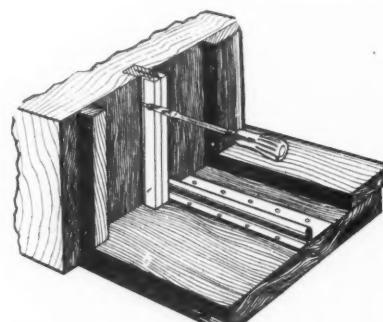
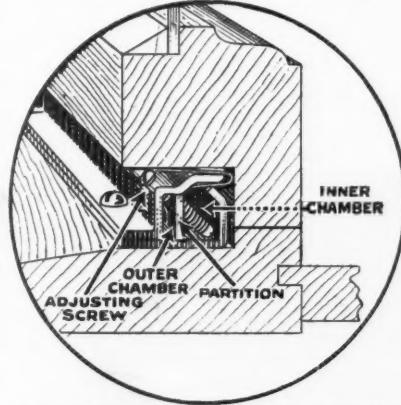


Fig. 6. How the Parting Strips Are Fastened with a No. 6 Flat Head Screw.

Make punch marks thru the strip near each end and in the center, place the strip in the groove of the sash and close the sash with a slam. This will make marks on the wood and show where the strip should be placed. Put in No. 3 nails and try the sash. If it fits all right, complete the nailing. Nail both sides of the strip, placing the nails 2 inches apart. Nail on the inside stops so that they do not touch the sash and the job is complete.



Cross-Section, Showing Detail of Weather Strips at Bottom of Casement Windows.

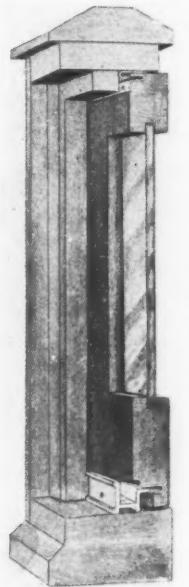
Many Types of Weather Strips

As was said at the beginning, there are many kinds of weather strips that will require slightly different treatment in installing than those to which the foregoing applies. However, the experienced carpenter easily will be able to apply what has been said to the others and give his customers a workmanlike job.

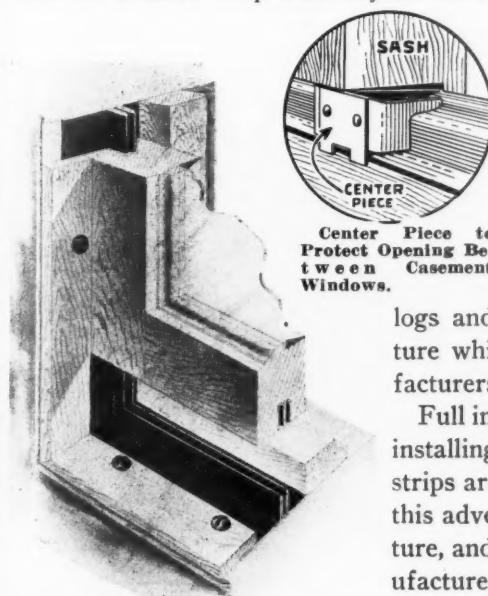
But the outstanding feature of the business of installing weather strips is that at this time there is a great demand for them, or will be if the contractor impresses their fine points on the building owners of his community. And to be prepared to install any kind of weather strip that may be demanded a familiarity with the various designs is necessary.

This information can be obtained by securing the catalogs and other literature which the manufacturers have.

Full instructions for installing weather strips are contained in this advertising literature, and several manufacturers furnish blue prints, showing details of construction.



Cross - Section of Casement Window. Note Trough to Catch Leakage of Water.



Section of Window Raised, Showing Application of Weather Strips.

Automatic Window Lock and Anti-Rattler

A double grip, automatic window lock and anti-rattler, designed to accomplish the results described, recently has been placed on the market. It is shown in the accompanying illustration. In putting it out the manufacturer informs builders that it is an efficient device, but that its successful operation will depend on its being properly attached.

The lock is fastened to the right side of the window sash, altho it will work equally as well on the left side, and moves with the window. In attaching the lock, the window should be closed and the sash lock released. Fully compress the levers, then tie with a cord strong enough to hold them in position. See that the window guides are firmly nailed to the casing. To get the necessary clearance, place a piece of tin or cardboard between the dogs and window guide while attaching to the window sash. Then put in the screws tight.

This is easy to attach and will perform its functions well. Installing such locks will save the builder many complaints about rattling windows, and it also will lock them tightly.



Window Lock and Anti-Rattler, Efficient and Simple to Attach to the Sash.

Treatment of Shingled Surfaces

The treatment of wooden shingles is one of importance in working out an attractive and harmonious color scheme for the entire house. It is true there are some house types, such as the bungalow, which are sometimes entirely covered with shingles. If left in the natural state, such surfaces will rapidly change color due to exposure to the elements.

The shingled surface therefore should be treated in some manner not only to protect it against the elements, but to give an artistic coloring which is much more pleasing than the natural shingle. For this purpose, a good grade of shingle stain should be used. Those stains containing a percentage of creosote oil are preferable as creosote oil has great preservative qualities.

A shingle stain of the type described may be applied either by dipping the shingles or if the shingles are already laid, the stain may be applied with a brush. Two coats of stain should be used, and to arrive at the quantity of stain required for the work, one gallon of stain should be estimated to cover 125 square feet of surface, two coats. Where the shingles are to be dipped, allow a little less than three gallons of stain to the thousand shingles.

With the shingle surface protected in this manner, it will be found that the shingles will be protected against decay for a greater period of time and in addition, the appearance will be materially improved.

THREE is a great amount of practical and exceptionally useful information given to all the readers of the AMERICAN BUILDER in the answers to correspondents, contained in the Correspondence Department each month. Here members of the AMERICAN BUILDER Family ask questions, and their brothers in the building industry answer them.

Profitable Opportunity for Contractors in Local Wood Lots

USING PORTABLE SAWMILL TO TURN TIMBER INTO LUMBER MAKES CONTINUOUS WINTER WORK AND SUPPLIES MATERIALS FOR NEXT SEASON'S BUILDING OPERATIONS

PROFITABLE work during the winter months, when building operations slacken, is something that every building contractor is looking for. Not only does such an occupation keep the contractor busy, but it enables him to hold his workmen together and provide them with steady employment.

During the present summer a condition has arisen that has brought to the attention of builders and lumber dealers the possibilities that lie in the wood lots in their immediate neighborhoods. The scarcity of lumber and the consequent high price that this building material has brought have demonstrated that securing lumber from the standing timber nearby is profitable in more ways than one. Cutting timber and converting it into lumber commands a good price from the owners of the property from which it was taken;



Sawing Up Pine Trees.

the added advantage is that by securing a supply locally the contractor will have material with which to work during the following summer, and at a price far below that commanded by lumber from distant points.

The construction work in the many army camps in the United States and the lumber needs of the American army in France demonstrated the usefulness of a portable saw mill. While logs were not converted into lumber during the construction of the camps, nevertheless saw mills were set up and an immense amount of the timber was cut

into the proper dimensions at the camps. But in France, the American soldiers set up their saw mills in the woods and turned out railroad ties, and lumber for the camps and for other needs of the army.

Much Standing Timber Distributed Thruout Country

Thruout the United States, in every locality, there still stands a great amount of timber, waiting for the saw mill man to convert it into lumber. Heretofore it



Showing the Carriage and Saw of a Portable Saw Mill.

has not been of enough value to pay the owner of the trees to cut them, but with lumber at the present prices they have become a valuable asset—an asset that can readily be turned into cash. Another point that will appeal to the owners of these wood lots is the fact that land values also have jumped and the property is too valuable to longer remain uncultivated.

A portable saw mill consists of three essential parts, the saw, the carriage and the power plant to drive them. They do not require a great investment, much less, in fact, than is generally supposed. A mill that will cut logs 36 inches in diameter and 20 feet long costs, with power included, in the neighborhood of \$1,000. If the contractor has a portable engine of from 6 to 15 horse power, which is sufficient to operate a mill of the capacity mentioned, the cost will be much less. Such an outfit has a capacity of from 2,000 to 8,000 board feet a day, which, at the average price for sawing of around \$10 a thousand feet, will earn

a good income for the owner of the mill.



A Portable Saw Mill, Driven by Traction Engine, Set Up to Turn Small Timber Into Useful Lumber. Note the Simplicity of the Saw Rig, Which Requires Only Little Work to Be Made Ready for Sawing.

Great Possibilities in Wood Lots

To show the possibilities in the small wood lots of the country, let us first consider the advantages that cutting the timber and turning it into lumber has for the farmer.

There are two kinds of wood lots—the one on the hill and the one on the level. The first, perhaps, could not be cultivated, even if it is cleared of timber. Its greatest value lies in the timber and the pasturage it affords. The wood lot on the level ground, however, is a different proposition. For centuries this ground has been covered with trees and the soil has been enriched by the mold created by fallen leaves. Cleared of the timber and with the stumps removed it is virgin soil, capable of producing extremely valuable crops.

For years the owners of these properties have drawn on the wood lots for supplies of fire wood, fence posts and rails and poles. But the timber has been left standing. During the last decade this timber has doubled in value, and now is worth too much to be left standing and making the ground useless for agricultural purposes.

Setting up a portable saw mill in wood lots like these is not an arduous task. After the timber is felled and cut into the proper lengths, the mill is taken to the lot—it is much more easy to move the mill than to transport the logs—and make ready for sawing. This is done, of course, in the early winter, and during the three months of cold weather in the northern section of the country, thousands of feet of good lumber are turned out, and piled ready for use the following summer.

It seldom pays to cut a log less than eight inches



A Close-Up View of the Portable Saw Mill. Wooden Tracks Are Laid Where There is Much Timber to Be Cut and Sawed and the Lumber Is Carried to the Pile.

in diameter into lumber. By the time the small logs are squared up and the slabs taken off, there isn't enough left, perhaps, for more than a few 2x4's or 2x6's. But if this sort of lumber is needed it will pay to saw it, even out of the small logs. Anything of eight inches or over makes a good saw mill proposition. The smaller logs, however, are not wasted. There always is a ready sale for railroad ties and they command a good cash price. Then, too, the smaller logs can be cut into fence posts, crate stock, box boards, laths and even shingles, the latter requiring a special machine.

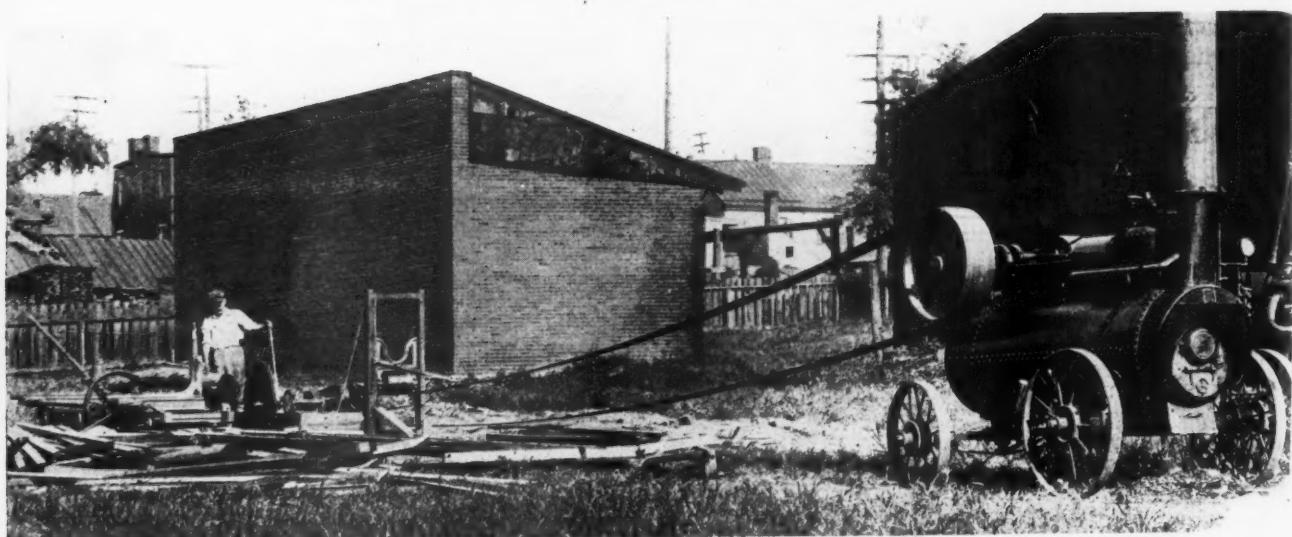
What is of the greatest interest to the contractor who owns and operates a portable saw mill, however, is the fact that the owner of a wood lot has the supply of lumber on his place for the buildings he needs the following season. When a farmer can get valuable land cleared and at the same time secure a supply of lumber for a new barn, granary, home, or other farm building at an exceedingly low cost, he is worth cultivating. His lumber really costs him only



Another View of a Portable Mill at Work.



The Crew and the Portable Saw Mill Busy Turning Logs Into Saleable Lumber.



Another View of a Portable Saw Mill, Driven by a Traction Engine. Small, Crooked Logs, Ordinarily Used as Fire Wood Are Being Turned Into Lumber.

the price of sawing, plus the time required to fell the trees and cross cut them into the proper lengths for the saw mill. With the lumber on the place he has gone a long way toward securing the needed buildings. When ready to build a portable saw rig, set up on the place, soon dimensions the rough lumber.

This idea of employing a portable saw mill to keep the men busy during the winter is well worth considering by contractors who are located in the rural districts. Not only will the owner of the outfit make a good income at a time when otherwise he might be idle, but he will be creating good building jobs

for himself among the farmer-owners of wood lots. While the timber sawing season is several months away, now is a good time to make a survey of the wood lots in the neighborhood and feel out the



At Work in the Wood Lot.



Note How Part of the Wood Lot Has Been Cleaned.

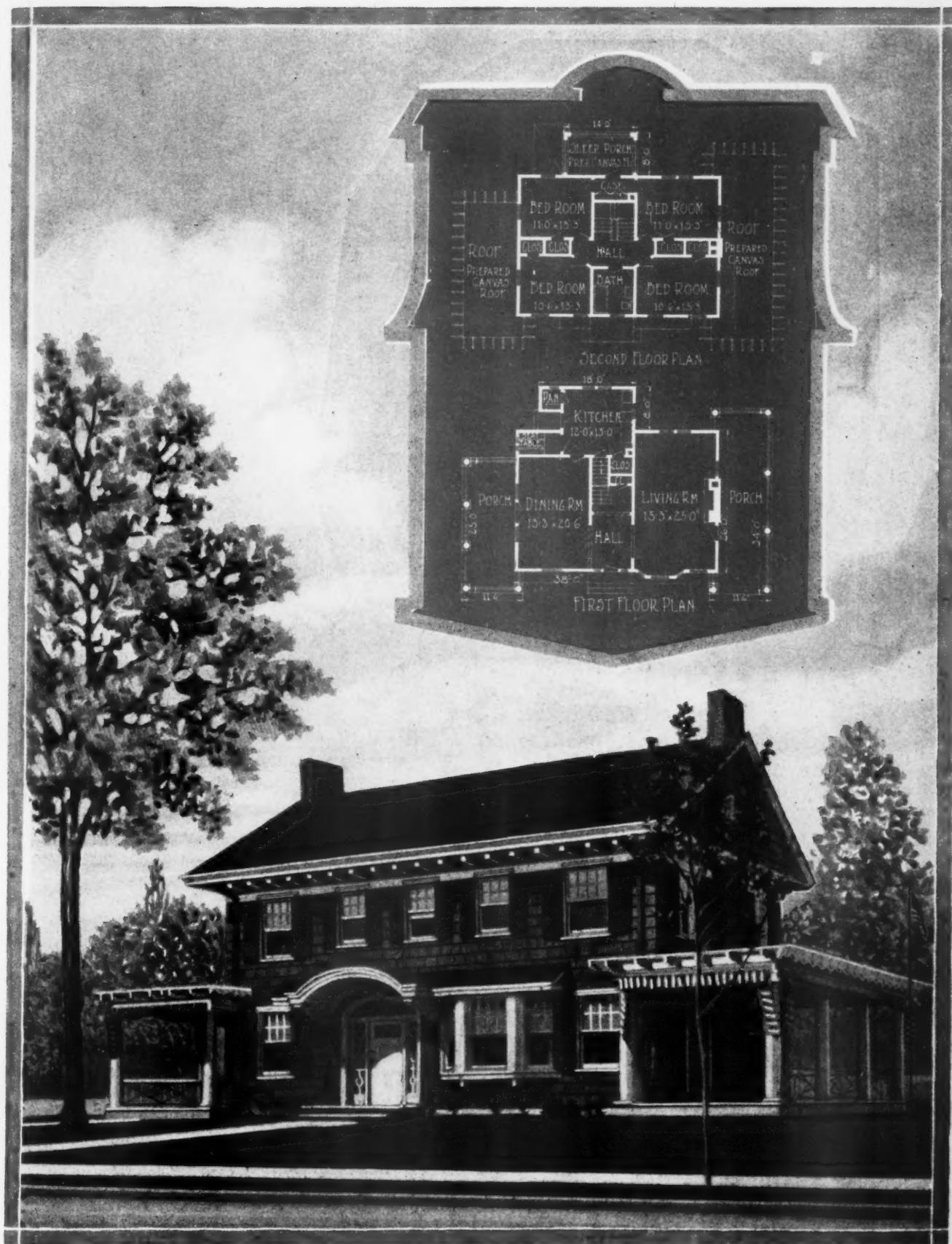
owners. For a hustler it is quite possible to secure the contracts in advance of the purchase of such an outfit. At any rate, even tho the owner of the timber is not in the market for building, he is ready to turn what he may consider waste into something that will bring in cash and the local lumber dealer will welcome an addition to his stock from a source that does not require rail transportation.

Commercial saw mills, nowadays, make what are termed 2x4's, $1\frac{1}{8}$ by $3\frac{1}{8}$ inches, the idea being to save freight charges. Other structural timbers also are cut "thin." The structural timbers cut locally, while they are not so well finished, have the extra strength that is important in barn and other farm building construction.

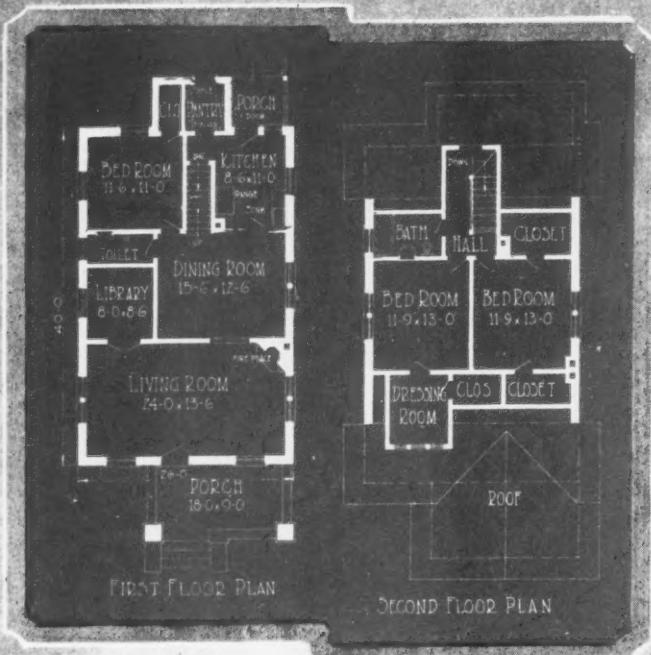
While the lumber produced locally may not be so well finished, it will often be stronger.



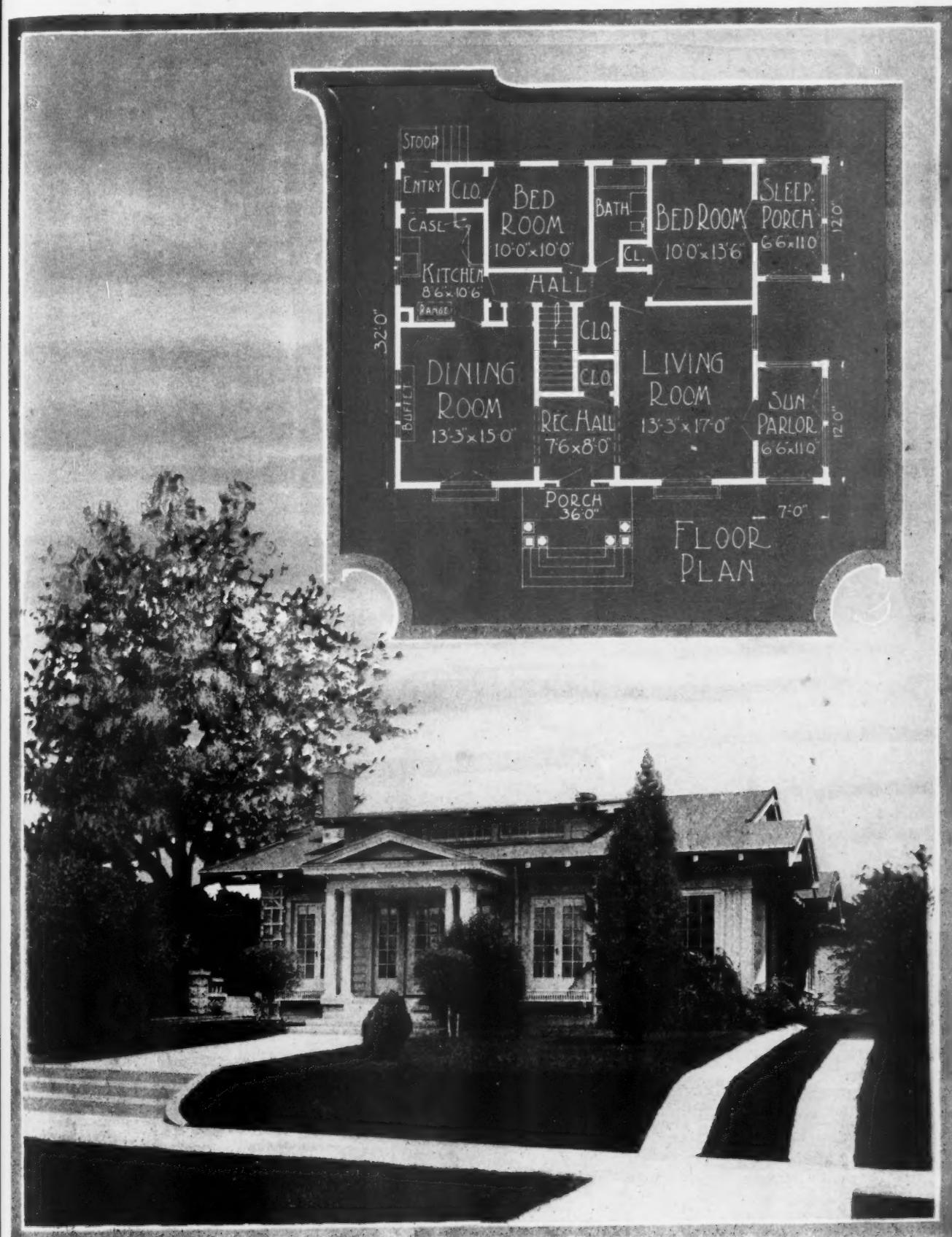
Latimer & Wade, Chepachet, R. I., Set Up Their Portable Saw Mill in Farm Wood Lots and Turn Out Many Thousands of Feet of Valuable Lumber During the Season.



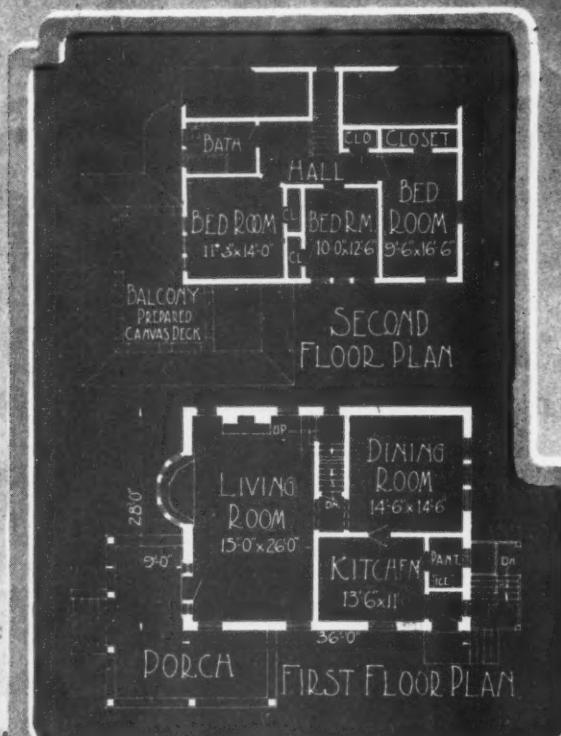
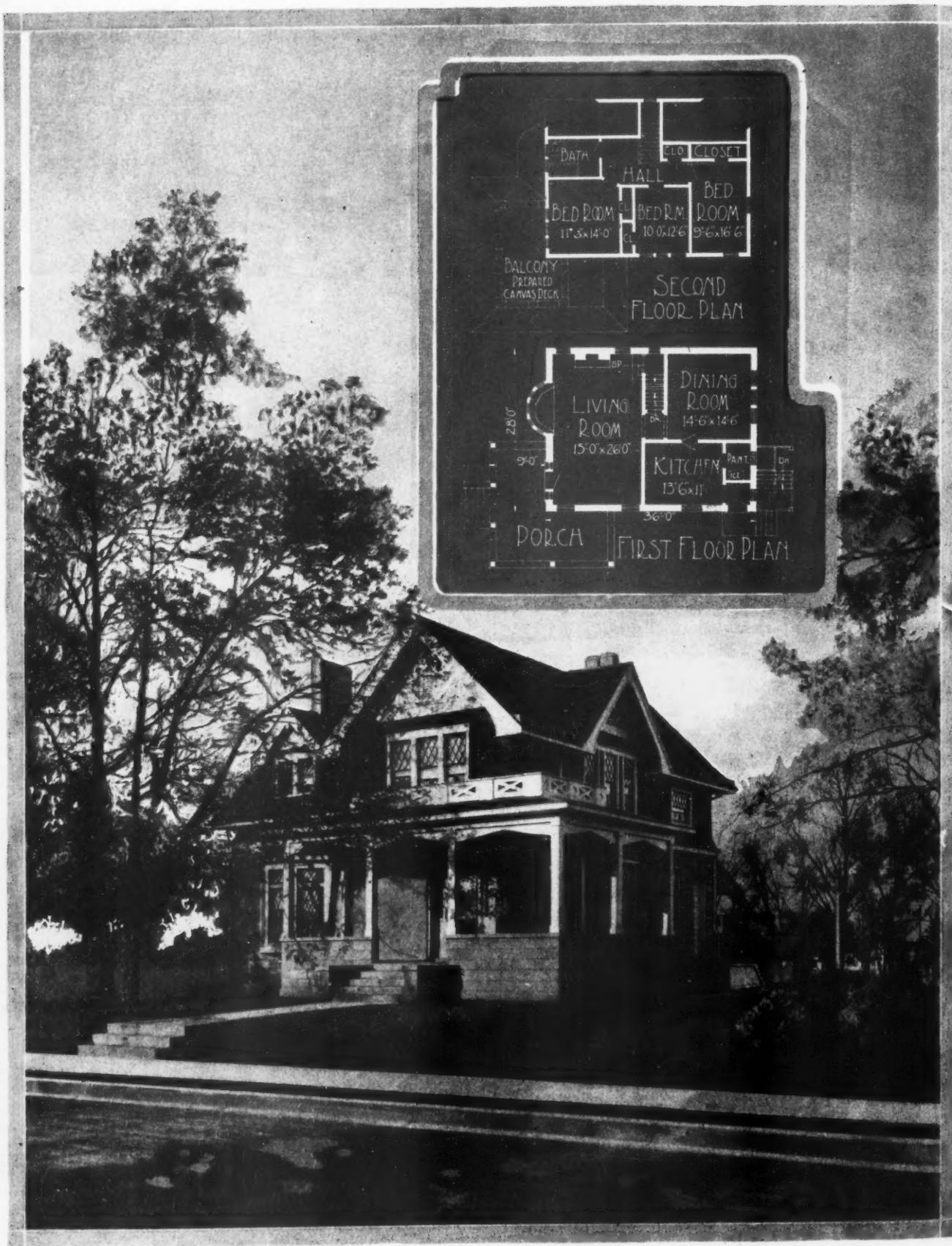
S EVEN-ROOM SHINGLED COLONIAL HOUSE. The beauty of this design will attract the attention of every prospective home builder. The shingled sides, the bay in the living room, the pergola effect in the roofs of the porches, and the artistic roof over the entrance combine to make this a most attractive home. Seven good rooms and bath are provided in the interior. The large living and dining rooms, both opening onto the porches, with the central hall between, follow the colonial idea. The four bedrooms on the second floor all are corner rooms, and each is accessible to the canvas-decked porch roofs. A sleeping porch at the rear adds to the comfort of the home. Taken all together this is an exceptional home design. Size 38 by 34 feet.



STORY-AND-A-HALF STUCCO HOUSE. Seven good rooms, bath and a good-sized dressing closet are provided in this design for a stucco house. The dimensions are only 26 by 40 feet, besides the front and rear porch projections. The contrast in color of the stucco up to the first floor sill and on the sides of the house and the tile roof give it an exceptional exterior appearance. On the first floor are a large living room, 24 by 13 feet, 6 inches; a small library or den, dining room, kitchen and one bedroom. On the second floor are two bedrooms, the bathroom and a dressing room. This is a fine design for a moderate-sized and priced stucco home, one equally suitable for city or rural home builders.



WHITE BUNGALOW OF FIVE ROOMS. Bungalows are popular, but here is a bungalow design that will be exceedingly popular, as it is a happy combination of great exterior beauty and interior comfort and convenience. The colonial porch, French windows opening onto little balconies, the gables in the roof and the broad dormer make it out of the ordinary. Five rooms, bath, and sleeping and living porches are shown in the floor plan. The dimensions are only 36 by 32 feet. The living and dining rooms are divided by a good-sized entrance hall. Opposite are the bedrooms, with bath between. The porch adjoins the living room and the sleeping porch one of the bedrooms. This will make a fine home for the small family.



SIX-ROOM CONCRETE BLOCK HOUSE. Here is a rectangular house, 28 by 36 feet, that is given an exceptional exterior by the wide porch that runs around the corner, and has a canvas decked roof, off the corner bed room. The smooth-faced concrete blocks make a substantial appearance. A large living room, 26 by 15 feet, with a fireplace at one end; the dining room, 14 feet, 6 inches, square, and kitchen are on the first floor and three bedrooms and bath on the second floor. The rooms are arranged for convenience and comfort, being compact and all of good size. This is a good design for the home builder who wants a modern house that is not costly.



Fred Beard says:

"Have You Noticed That People Don't Set Up Big Monuments to Someone's Memory? They Spend the Money for Memorial Buildings—Something Useful"

"**F**RED," remarked Ed Maple, the lumber dealer, to Fred Beard, "what do you think of this plan to erect a memorial to the young men who left this town to fight for their country and now are buried in the American cemeteries of France and Belgium?"

"I hadn't heard of any such project, but offhand I would say that I am in favor of it," replied Fred Beard, as he seated himself in his office at the rear of his hardware store and faced his old friend. "Memorials to the men who have given their lives while doing their patriotic duty are fine things. They not only show the fathers and mothers and friends of those who made the supreme sacrifice that what they have done is appreciated, but they keep alive the memories in the generations to come. What sort of a memorial has been proposed, Ed?"

"Well, there was a fellow in my place today talking with Sam Williams. Sam's son, you know, was one of our boys who enlisted when we got into the war, and was killed at St. Mihiel. The salesman wanted Sam to put up \$25 to have his son's name engraved on a bronze tablet that he proposes to put up on the city hall. I didn't think much of the idea; that is, of asking the fathers to pay to perpetuate the memories of the boys who fought for you and me and the rest of the folks. Of course, Sam's business is good; he has a great many building contracts and is making money again after being idle a couple of years. But the thought oc-

curred to me that there are a lot of fathers and mothers who can't afford to put up \$25. I didn't learn how their sons' names were going to be paid for."

"What did Sam decide to do?"

"Oh, he said he would contribute \$25, when the idea was rounded into such shape that he was assured that the tablet would be put up."

Fred Beard was silent for a moment. And then he began to talk.

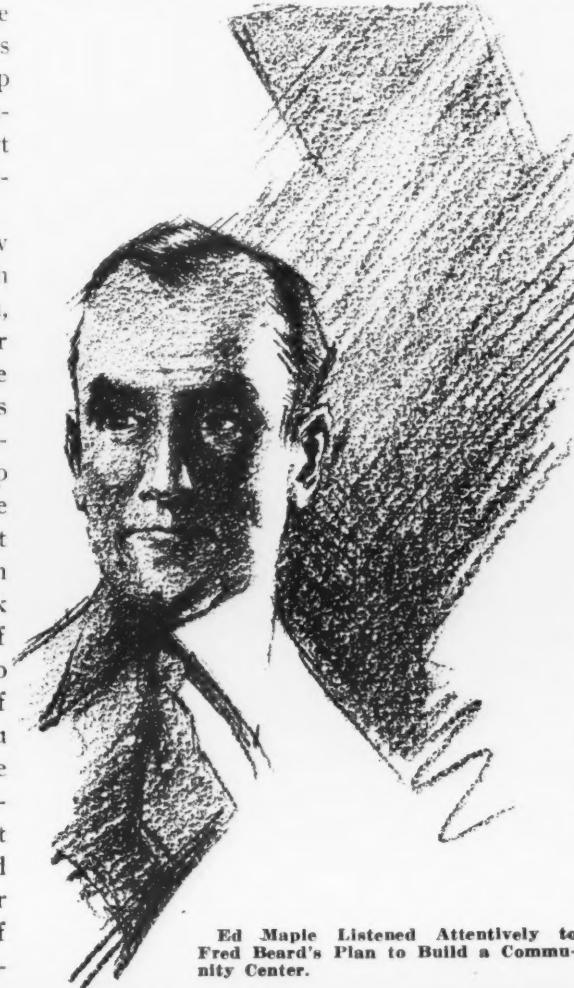
"Have you noticed, Ed, that people don't put up great big monuments to some one's memory any more? Instead they give the money to a college for a needed building, which takes the name of 'So-and-

So Memorial Hall,' or else they provide the money for some other useful building.

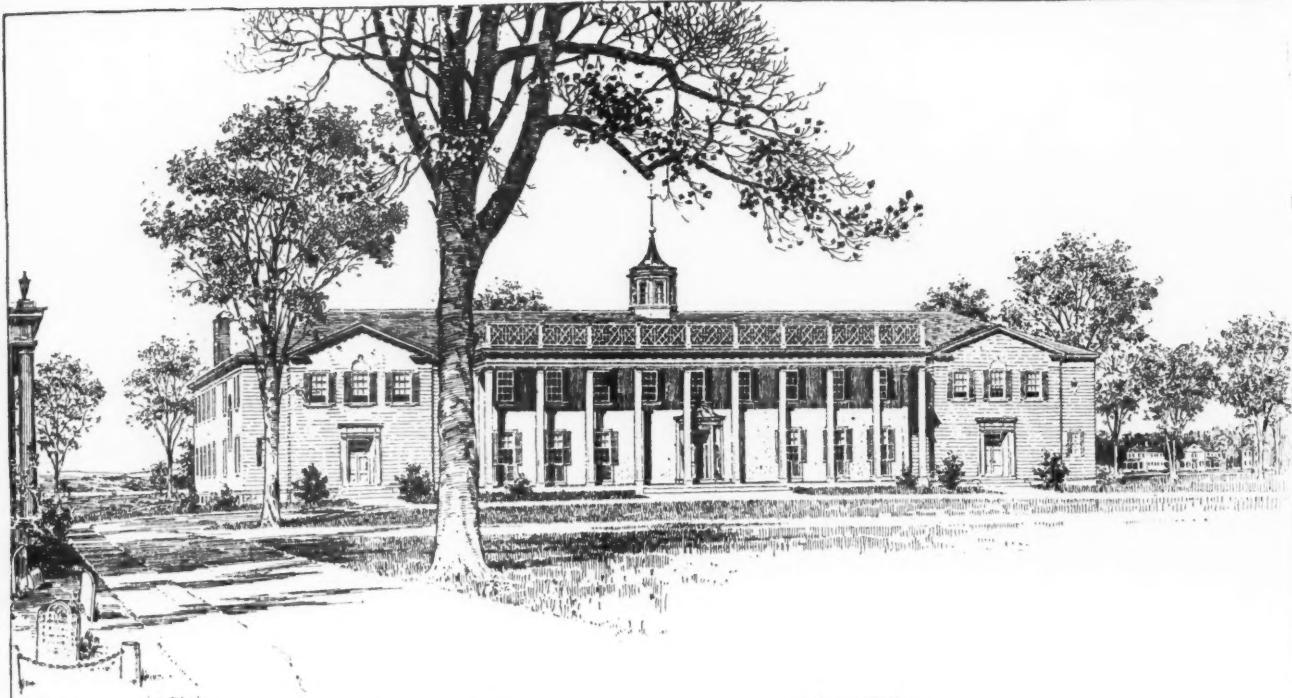
We Ought to Build a Memorial Building to Our Soldiers

"That's what I believe we should do here, if there is to be a memorial for our soldiers. Put up a building that would provide a place for public gatherings, such as we have now and then. You know that there has been talk of a convention hall; why not a memorial hall? Let every one help in this project, just as they do for other public buildings, such as the hospital and the Y. M. C. A. That would be a memorial that would mean something.

"A number of public spirited men in Chicago have formed an association to raise the funds for just such a building. They started it off with good-sized individual subscriptions, and pledged themselves to help get the public interested. I'm going

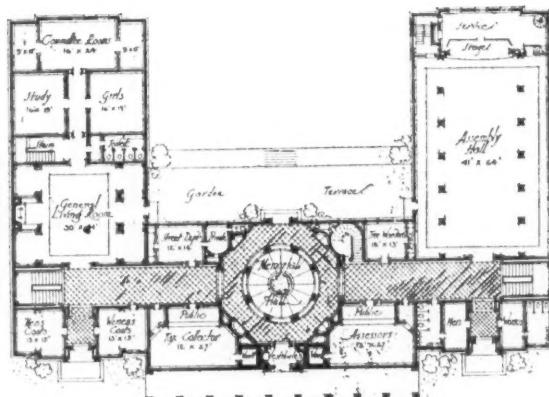


Ed Maple Listened Attentively to Fred Beard's Plan to Build a Community Center.



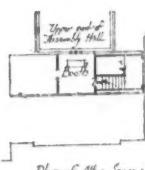
Design for a
COMMUNITY
CENTER
BUILDING

SUBMITTED BY
Maurice Feather

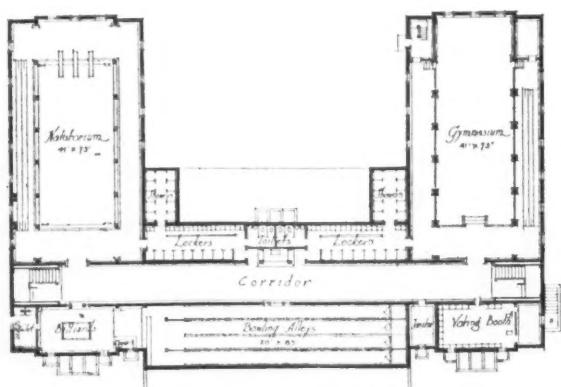


FIRST FLOOR PLAN

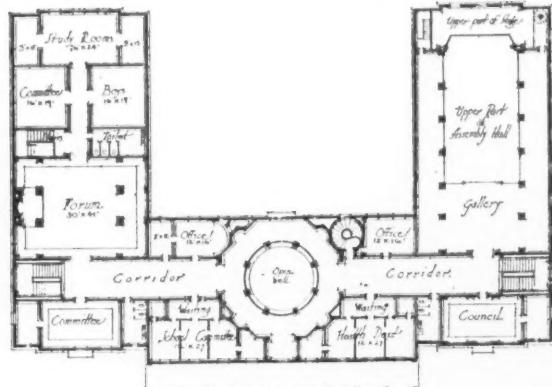
Graphic Scale for all Plans
THREE FEET



Plan of the 'Upper Park Assembly Hall'



BASEMENT PLAN



SECOND FLOOR PLAN

The Community Center Design That Was Awarded First Prize in the Competition of the White Pine Bureau. The Design Was Submitted by Maurice Feather and Niels H. Larsen, Boston. This Is the Type of Building That Is Being Planned by Many Cities Large and Small, as a Memorial to the Soldiers and Sailors Who Lost Their Lives in the War. It Combines Beauty with Utility, and Beside a Memorial Provides for the Community Activities of the Families and Fellow Citizens of the War Victims.

to get some more information about the Chicago plan, as a basis to talk over a memorial building project with some of the leading men of our city.

The Idea of a Community Center is Growing Rapidly

"This idea of a community center, coupled with a city hall for the smaller cities such as ours, has taken a great hold on the people of this country. Why, I noticed only the other day that the design asked for in the annual competition of the White Pine Bureau was for a Community Center Building. The one that won the first prize was a beauty. It is just the type of building that we ought to erect here. It contains under the same roof a large auditorium, recreation rooms, such as bowling alleys and reading room, and provides offices for the city officials and a chamber for the city council. I would say that such a combination is excellent. Besides, such a building would be paid for by the city, and the individuals would not be called on to subscribe; except indirectly. We need a new city hall, anyway. I believe I will go up to the council meeting and put the subject up to the councilmen. But if they don't take to the idea, we can start the project ourselves and depend on contributions to build it."

"We all pitched in and raised \$60,000 for a Y. M. C. A. building and didn't have much trouble in getting the money; and that was before the war, too," put in Maple.

"Yes, and you remember how much enthusiasm there was during the campaign; how all the businessmen got together at a noonday luncheon every day, and when we got thru with the ten-day drive how much better feeling there was between the men in the same professions and same businesses in this city," responded Beard. "I really believe that we all got more than our money's worth and were well repaid for our work.

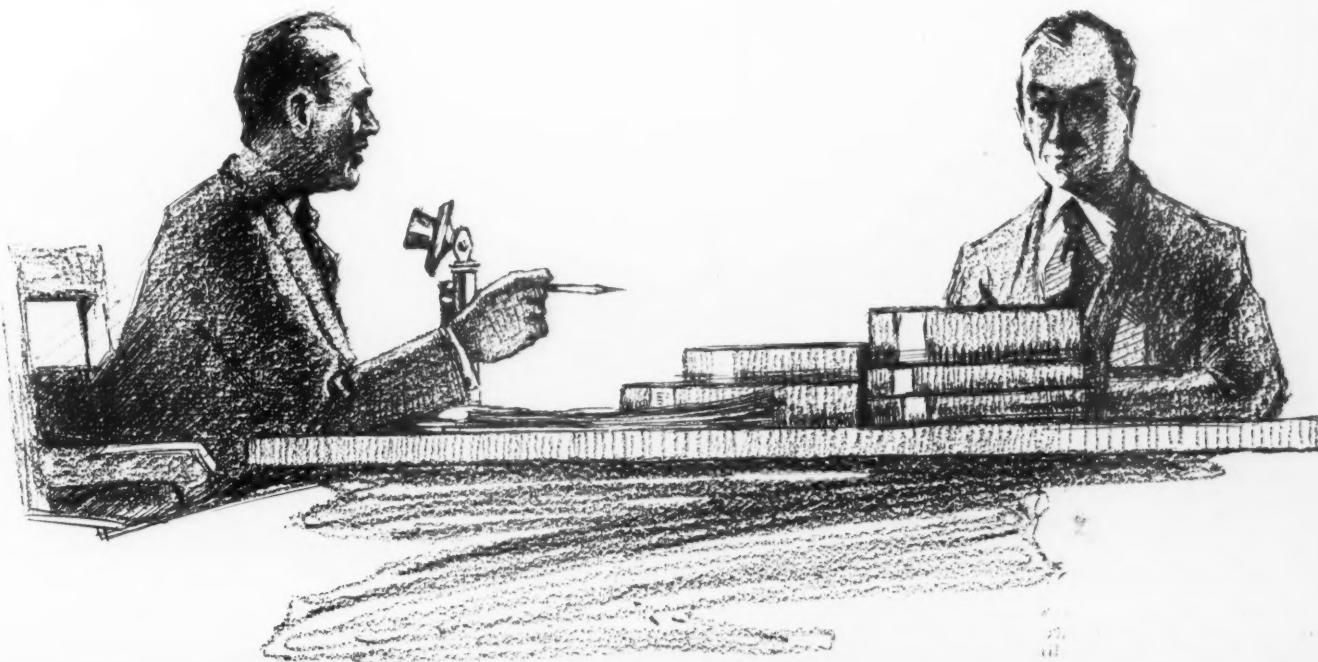
"It's a wonderful thing for people to work for an unselfish purpose. And that's what we'll be doing if we start this memorial building project. And the time to do it is now. We all got out and hurrahed for the boys who came home, and intermingled with the joy of the fathers and mothers whose sons returned, was the sorrow of the parents whose boys were missing. We contributed for the home-coming celebrations, and I believe that more will contribute for a memorial to the boys who were left behind."

"So do I," said Ed. ♦

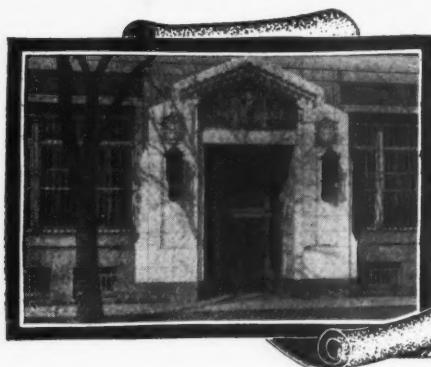
THE spirit of helpfulness that prevails among the members of the AMERICAN BUILDER Family is a thing to admire. As an example: In the August issue a subscriber asked a question about roof framing. A half dozen readers took the time to help him with his problem. This is only one instance of the unselfish desire to help others that our subscribers show. •

HOME building campaigns are in full swing in hundreds of cities and towns thruout the country. No propaganda that the government or any civic organization ever has put out has taken such hold as this idea of urging concerted home building. The building industry, of course, is reaping the monetary benefit, but the country also will profit to an enormous extent. A nation of home owners is as solid as the famed "Rock of Gibraltar." ♦

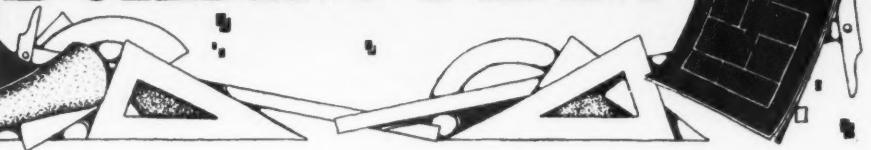
LOWERED production because of war necessity cut down the stocks of all sorts of building materials. So far there has been no shortage, but it is well in discussing materials not to favor any one kind. All will be used, but the contractor can influence the builder many times. Distribute the patronage as equally as possible.



"It's a Wonderful Thing for People to Work for An Unselfish Purpose," Said Fred Beard.



ALL SORTS OF BUILDING PLANS



Modern Court House Erected at Low Cost

SELLING BONDS ONLY AS FUNDS ARE NEEDED SAVES THOUSANDS ON COUNTY BUILDING

By H. C. Crocker

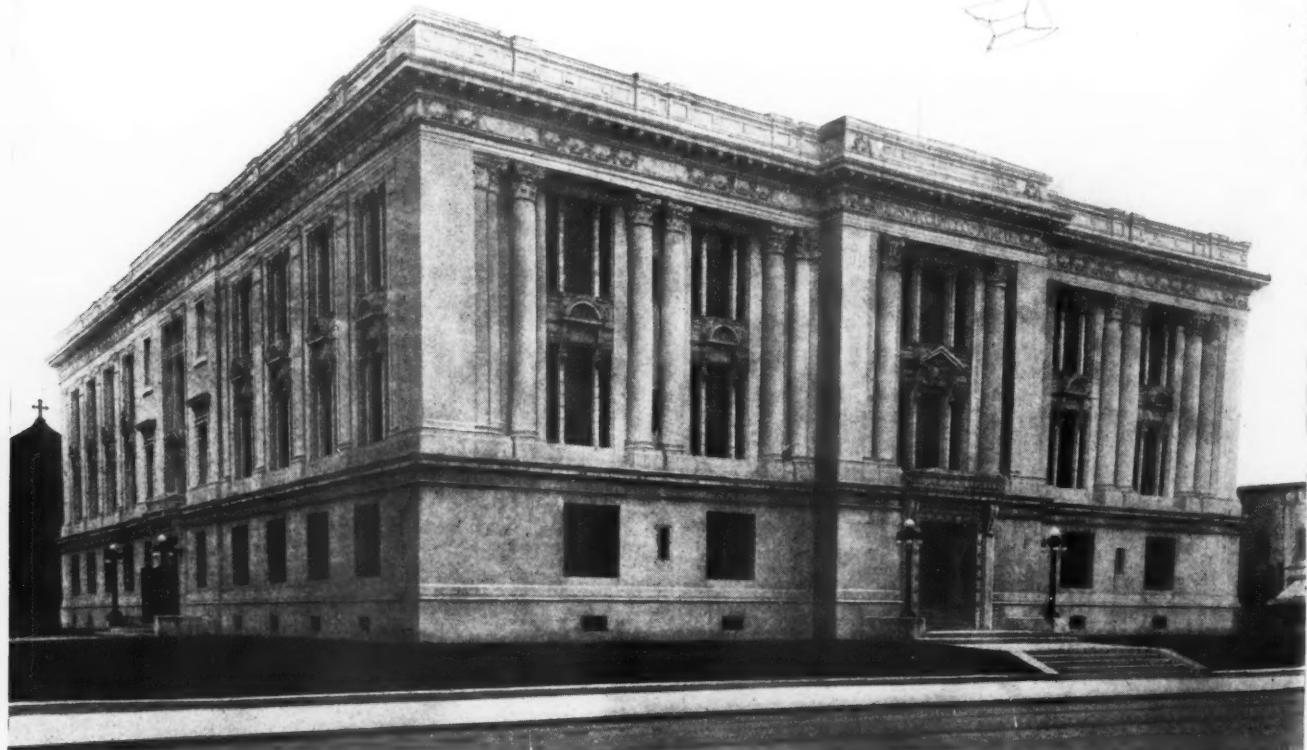
WAYS of stretching public funds to the very limit is one of the secrets the building contractor should be studying to encourage new construction. He will gain a great deal more in that way than attempting to get a job at a small margin of profit and be forced to use inferior material and workmanship to come out even.

Public improvements are generally being urged over the country and adopting a plan used in the erection of a new court house for Madison county, Ill., is one way to save funds. Voters had authorized a bond issue of \$250,000 for the building and when completed it cost a small amount less than the issue. Instead of offering the bonds for sale long before the money was to be spent they were issued in blocks as actually needed. The premium and interest for more than a

year amounted to \$19,375 and this sum went into the construction.

The builders, English Bros., of Champaign, Ill., received \$193,000 for their work. When the building was ready for occupancy it had cost \$269,058.95. The difference between the two figures was used in the construction of a boiler house, the purchase of furniture, electric fixtures, linoleum and other incidentals not included in the original contract.

The saving was applied on the heating plant, located a block away from the building and used jointly in heating the court house and jail. A tunnel connects the main building with the heating plant. Building the heating plant separate helped make the principal buildings more fireproof, eliminating much dirt and the two resulted in a cheaper insurance rate and a



A Fine Example of a Modern Court House Building. The Madison County Court House, Edwardsville, Ill., Cost \$193,000, Altho the Bond Issue Was \$250,000. It Is 120 by 160 Feet of Stone Construction. The Architect Was Robert G. Kirsch, of St. Louis, and the Contractors Were English Bros., of Champaign, Ill.

smaller cost in keeping the building clean.

Fine Court House Building

The court house, illustrated with accompanying reproductions and floor plans, is a building of striking appearance. The exterior is pleasing and its massiveness gives an idea of how substantial it really is. It is a building without excess of ornamentation, one worth every penny spent on it.

The plans and specifications were prepared by Robert G. Kirsch, of St. Louis, Mo., and were among forty sets offered. To make the competition more interesting cash prizes were awarded to several others and helped increase the number who entered. Dean Davenport, of the University of Illinois, was the consulting architect for the work.

The building is 120 by 160 feet. It is located on a lot exactly 208 feet square and containing approximately one acre. The few feet of space around the building are terraced but unplanted with trees or shrubs.

Rotunda Provides Large Meeting Place

There are four entrances, one on each side, and one being slightly more elaborate than the others. The entrances lead into a large rotunda, which with spaces on the second and third floor will easily accommodate 2,000 persons for a public gathering. During recent war activities this place proved one of the favorites for gatherings.

The windows thruout the building are built pretty much along the same design. Those on the lower floor are in pairs and nearly square, while those on the second and third floors are built in three sections. The glass surface of the building is equal to one-third of the space in the four elevations besides a double skylight at the top of the rotunda which supplies a flood of light for the interior.

The building has the general appearance of a three-story structure, but space on the roof is enclosed and fitted for jury rooms. Sleeping quarters, rooms for deliberations, shower baths, tubs and toilets as well as lounging rooms are provided for the jurors, who are away from public observation. Sleeping apartments have resulted in a big saving in hotel bills.

The rotunda provides a complete



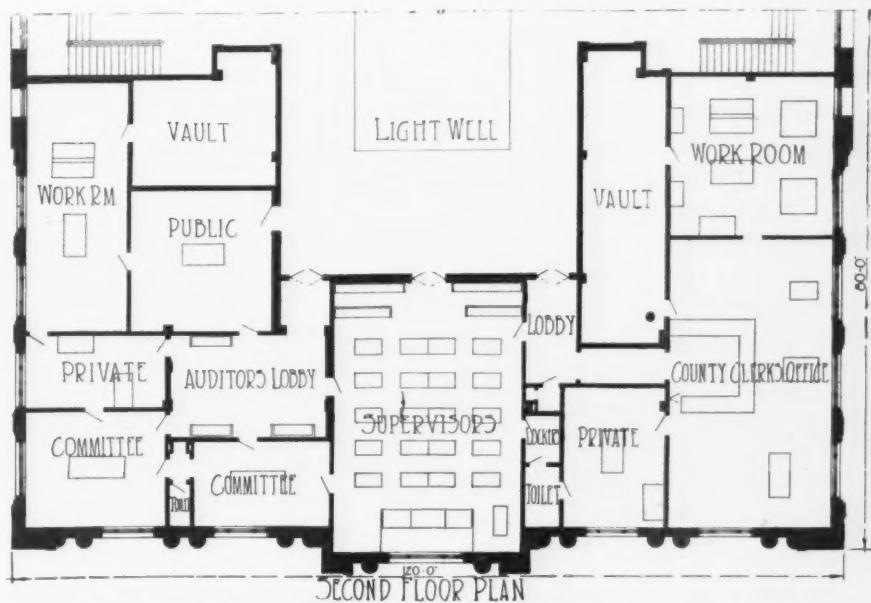
The Concrete Footings That Support the Madison County Court House, Edwardsville, Ill. The Photograph Shows the Ceremony Attending the Laying of the Corner Stone.

passage thru the building and entrance to offices on the first floor are off of it. The interior walls of the rotunda are finished in imitation brown stone. Marble plays an important part in the interior finishings. The floor of the rotunda as well as passages above and the baseboards are in polished marble.

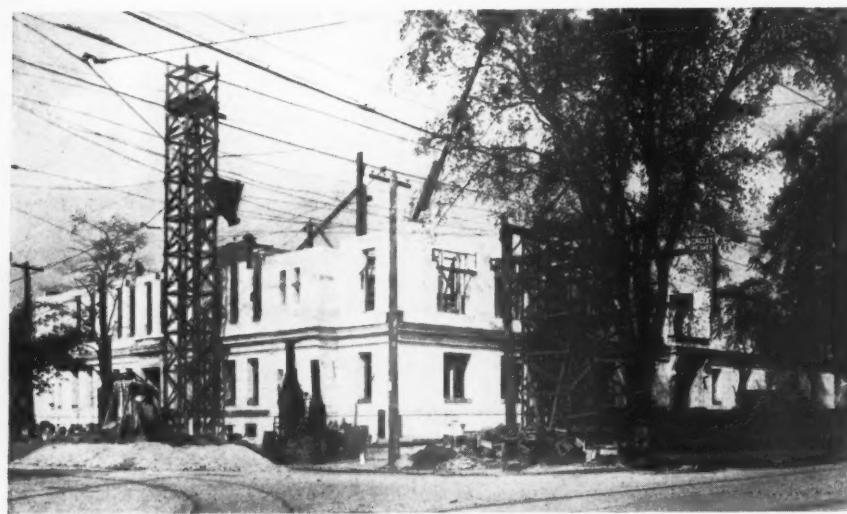
The building has two elevators, one as an emergency and helps carry out the uniform effect. At the side of each elevator the staircases are located and they lead from the side entrances to the promenades on the upper floors. An ornamental rail is used as a guard around the outer edge of the promenade.

All of the offices have an outside wall and artificial light is used but a short time on the darkest days in winter. The offices on the upper floors are conveniently located along the promenade.

The basement is used only for storage purposes. Some of the records of the county on file are more than 100 years old but the spacious vaults provide room for them and but a very few have been packed away.



Half of Second Floor Plan of Madison County Court House, Showing How Offices Are Arranged.



The Madison County Court House During Construction.

Court Rooms Follow Modern Ideas

The old idea of large and high walled court rooms has been done away with in the building. There are four court rooms and they are large enough to accommodate only the usual number interested in a legal proceeding. The smaller size makes the acoustics far better than in the old type of court room and frequently shut out the inquisitive public.

The building is designed for the convenience of the public and county officials. There is a public toilet on each floor for men. One for women is located on the second floor and another room on the third is furnished with comfortable chairs and lounges where they may retire and rest when forced to wait for any purpose.

Every office in the building has at least one toilet and wash room and some are provided with two. In a few instances concealed wash stands were required thru lack of space.

Building Well Ventilated

The building has a ventilating system which provides a large volume of washed air which is pumped into the various rooms. The system is among the latest, the air passing thru water to remove the impurities. During the winter the air is cleansed over warm pipes to give it proper temperature, aiding in regulating and maintaining a temperature in the offices.

The roof is practically flat. It is covered with a tar composition and thus far has proven entirely satisfactory. Rain and snow waters are carried off thru eight valleys to down spouts. The flat top works as well as a "duck back." Carry-

ing the water thru the walls of the building in the secreted pipes saves outside gutters and spouts as well as a future expense in repair replacement.

The architecture used in the building is decidedly Grecian with a few touches of the Ionic and Corinthian orders. The exposed surface of the exterior is dressed but unpolished marble. The ornamentalations are entirely of terra cotta. Eight massive columns set off the front of the building.

Instead of a telephone exchange in the building the offices have individual telephones. Public phones are installed at convenient places.

Steam is used in heating the building. The tunnel from the heating plant is large enough for men to pass thru in case of trouble. The idea of separating the building and heating plant have been very popular. A brick smokestack, 100 feet high, carries away the smoke and dirt of which a great deal would collect in the building if the plant was located in the basement.

A vacuum cleaning system is used to remove accumulations of dust. The floors of the offices are of concrete and covered with battleship linoleum.

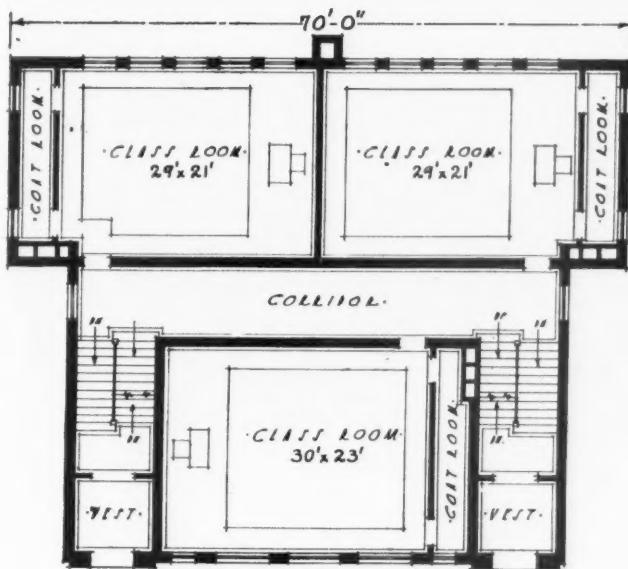
As an additional safeguard against fire the doors of all vaults are of metal and with a finish resembling wood. Instead of glass in the door transoms they are also of wood. The idea gives a more uniform appearance. The baseboard of the offices is of concrete, extending about ten inches up the sides of the walls.

Instead of window cords a chain is used, doing away with frequent breaking. So far as possible the radiators are placed beneath the windows.



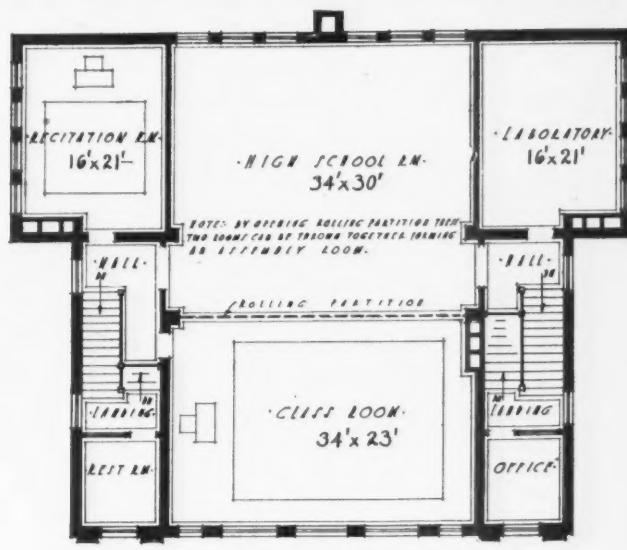
The Madison County Court House, Showing the Progress Made in a Month. This Picture Was Taken Thirty Days After the One Shown Above.

Design for a Two-Story Brick School Building



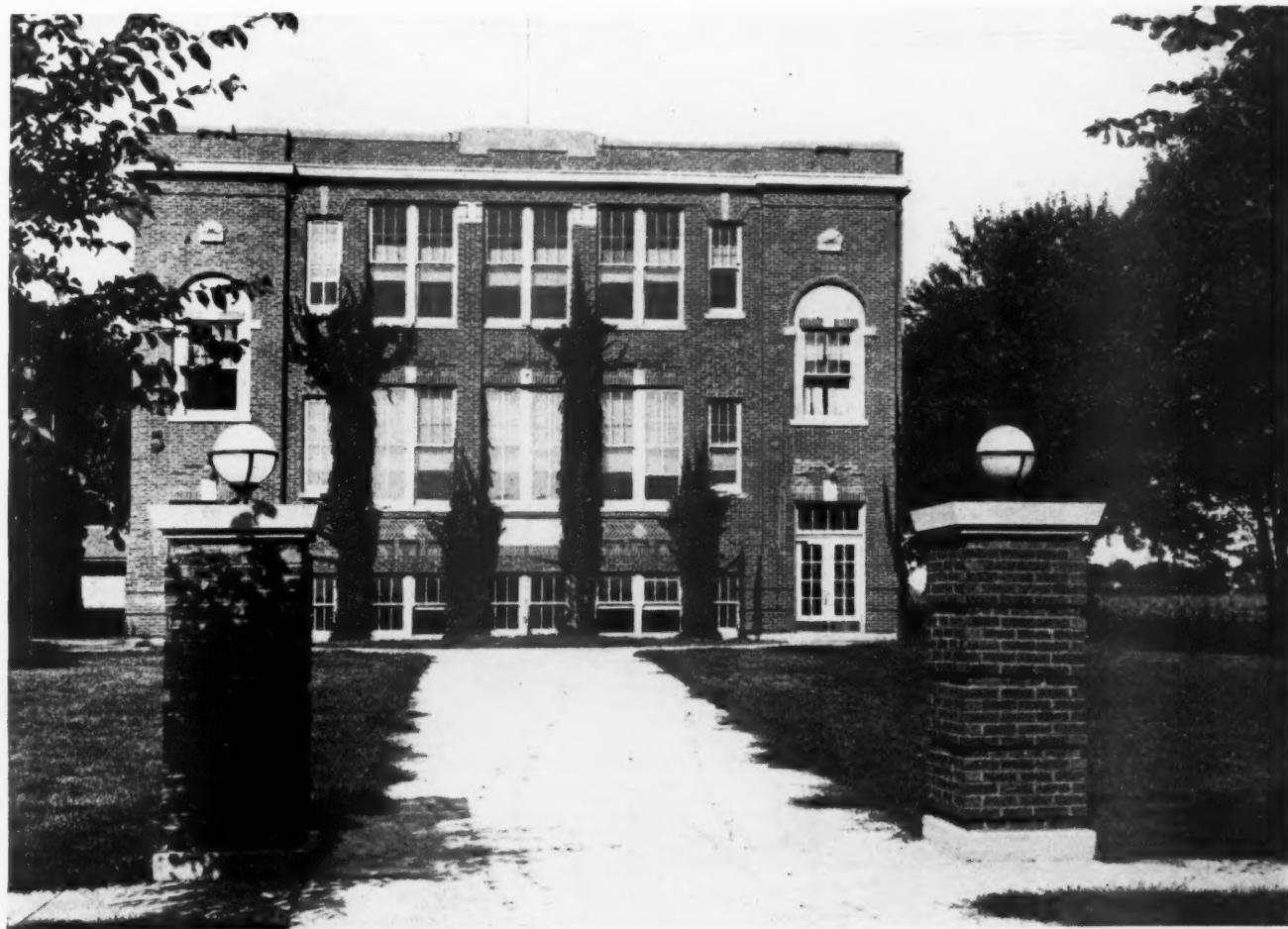
Plan of First Floor of Waterman School.

HERE is a design for a modern two-story brick school building. It was recently erected at Waterman, Ill. The dimensions of the building are 70 by 55 feet. The floor plans show how every activity of the smaller town school has been provided for. The rolling partition between the center class room and the high school room on the second



Plan of Second Floor of Waterman School.

floor permits these two rooms to be readily converted into an auditorium. Four class rooms, two recitation rooms, a laboratory, high school room and office are included in the plan. The building is of standard brick construction with cut stone trim on a concrete foundation and has a full basement. G. W. Ashby, of Chicago, the well-known school house architect, is the author of this design.



Two-Story Brick School Building at Waterman, Ill. Size, 70 Feet by 55 Feet. G. W. Ashby, Chicago, Architect.

Park Buildings for Various Purposes

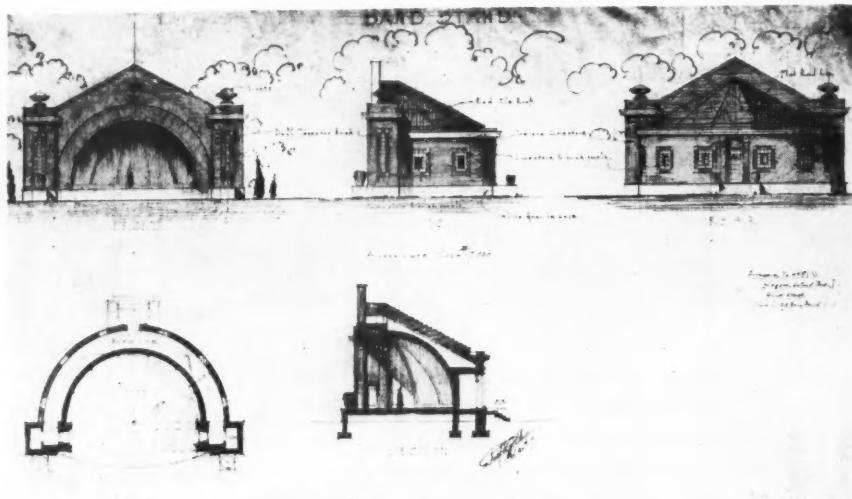
PAVILION, BAND STAND AND COMFORT STATION ARE STRUCTURES REQUIRED IN MODERN PARK—SOME BUILDINGS IN LEAGUE ISLAND PARK, PHILADELPHIA

By John F. McClaren

A GROUP of buildings of unusually attractive design are under construction in Philadelphia's newest park, League Island Park, an improvement which has involved the expenditure of approximately \$5,000,000. With the buildings completed the park will not only be one of the largest and most attractive in the East, but will be without a duplicate as to its buildings.

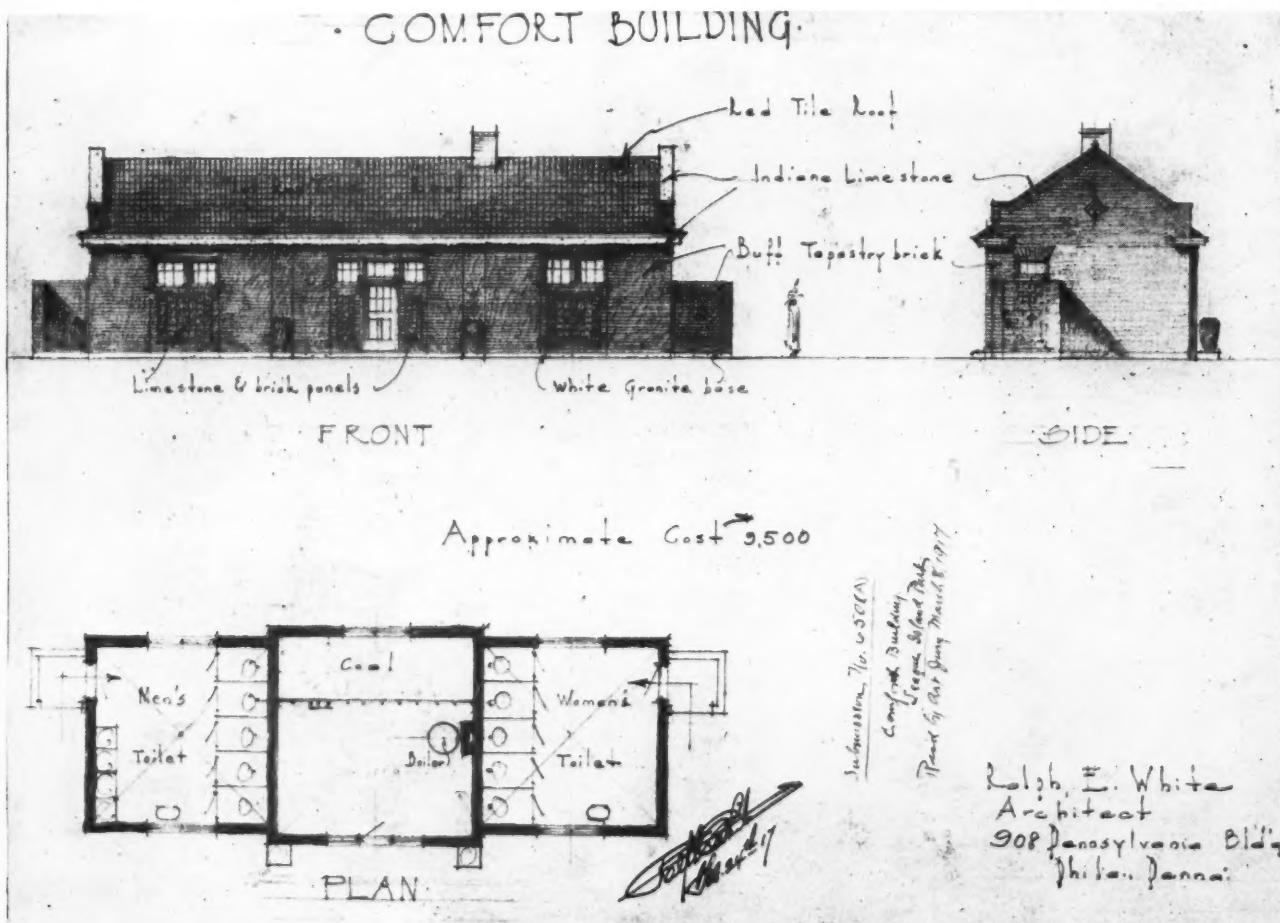
The buildings consist of a pavilion, a lookout, a bandstand, combination pavilion and boat house. The pavilion will occupy a site 65 by 115 feet. The main floor will have dimensions of about 40 by 70 feet with a height of about 25 feet. This room will be for the use of the public as a rest room or a shelter in inclement weather. The room will be provided with fireplaces at either end and the latest scheme of illumination and ventilation will be employed. At either end of the pavilion will be toilet facilities. Encircling the building will be an inclosed

promenade or loggia, the exterior side of which will have brick columns with pilasters and arches at each panel. The loggia will have a groined ceiling of sand

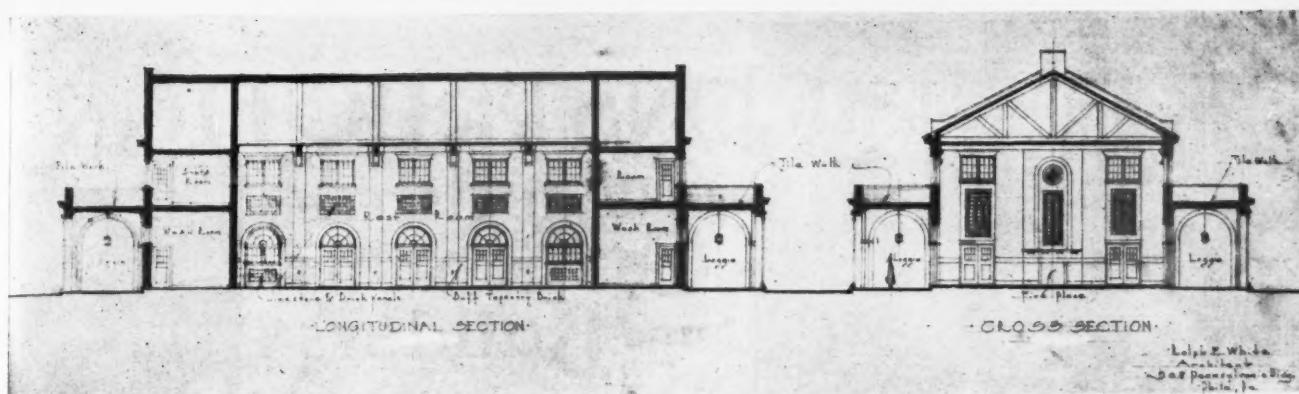


Elevation and Sections of the Semi-Open Bandstand in League Island Park, Philadelphia.

finish cement plaster. Above the loggia will be an open air promenade deck. The building will be constructed of a rough texture, buff color, brick with joints cut out



Elevations and Floor Plan of the Comfort Station in League Island Park, Philadelphia. This Type of Building is Being Erected in a Great Many City Parks.



Longitudinal and Cross-Sections of the Pavilion in League Island Park, Philadelphia, Ralph E. White, Architect.

one quarter of an inch. The cornices, carved stone work, and other stone trimmings will be Indiana limestone. The base courses and steps will be of white granite. The floors of the room, the floor of the loggia and deck promenade will be of green and purple slate laid in patterns. Roofs will be covered with red flat shingle tile.

Combination Boat House and Pavilion

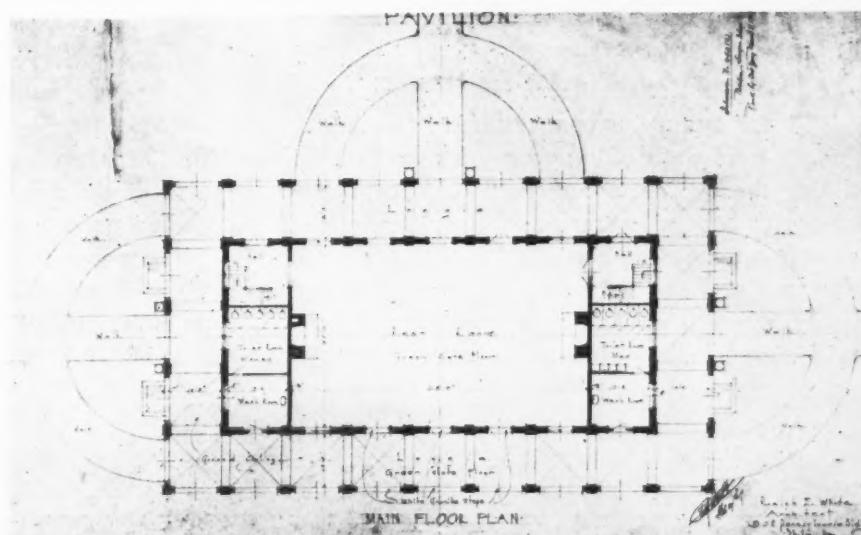
The combination boat house and pavilion will be located on a big artificial lake, extending well over it. The lower floor will be arranged for the storage of boats or canoes. The building will be 65 feet in width and 185 feet in length. Extending from the boat house and projecting partly over the water will be a concrete platform, 15 feet in width, which will make easy the entrance of persons in boats.

Band Stand of Semi-Open Type

The bandstand is to be of the semi-open type. It will be 35 feet in diameter. It will have a brick wall with stone trimmings at the rear and bronze columns and cornices at the front, set on a granite base. The roof will be red flat tile and the ceiling will be of cement plaster. The lighting

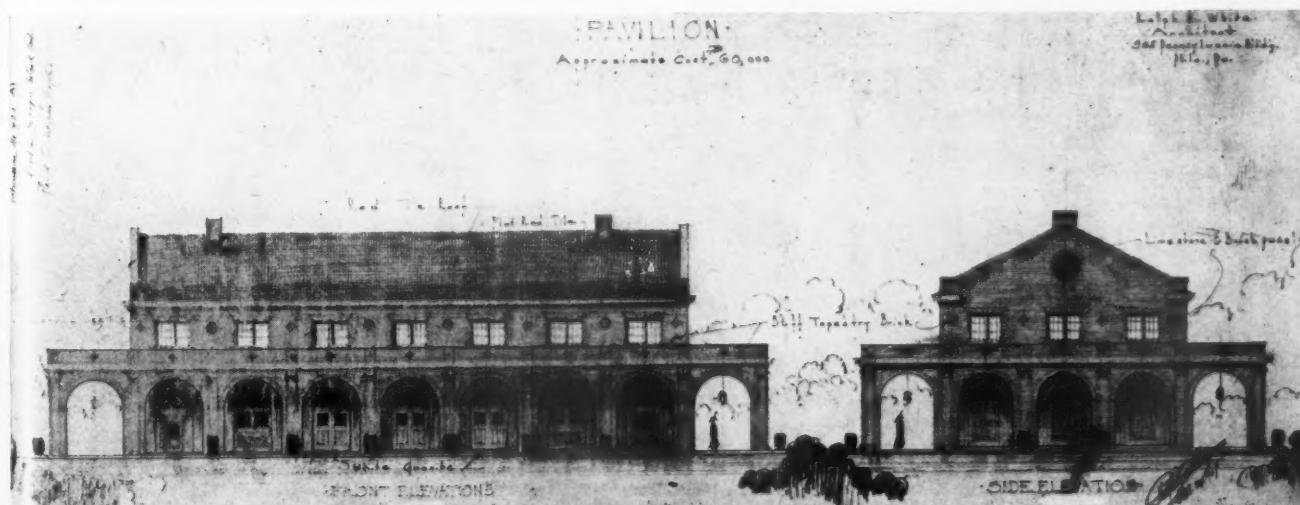
scheme for the stand has been given special attention. Illumination will be by reflected light around the inside of the entire ceiling.

The comfort station will include the most modern toilet facilities. The floor and walls will be con-

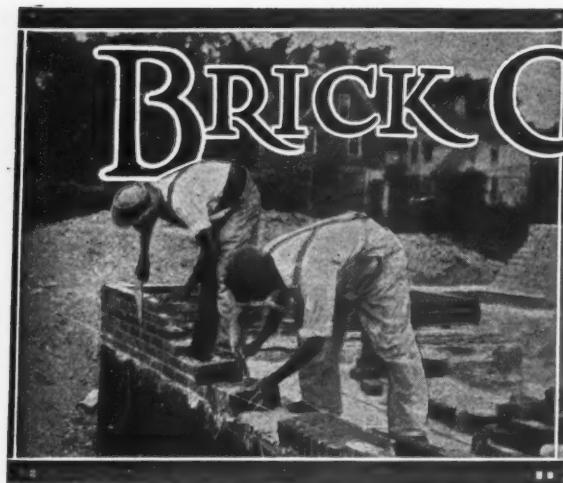


Floor Plan of the Pavilion in League Island Park, Philadelphia.

structured of Tennessee marble. Each room will have a tile ceiling. All fixtures will be automatic in operation. This style of construction is to be followed in other buildings of a similar character, which will be constructed at various points thruout the park.



Side and End Elevations of the Pavilion in League Island Park, Philadelphia, Ralph E. White, Architect.



BRICK CONSTRUCTION for Modern Carpenters and Builders



Well-Designed Brick and Stucco Residence at Minneapolis

HOW TO BUILD WITH BRICK—FACE BRICK VENEER MAKES ARTISTIC EXTERIOR WALLS

MANY of the most beautiful and artistic homes of the United States, both in the city and in the country, have exteriors of face brick, tied to either solid walls of common brick, or over hollow building tile or frame construction. The beauty of face brick, both in texture and color, lends itself to any surrounding, fitting equally well into the natural landscape, or into the closely crowded buildings of the city, where it stands out prominently.

The accompanying illustration, made from a photo-

graph of an exceptionally fine home in Minneapolis, where the natural beauty of the lake region that surrounds that city has been retained, shows how well face brick homes fit into a background of forest trees and shrubs. While this is a rectangular house, the plain lines are broken by the entrance porch and the living porch. Face brick was used in the exterior walls of the house and living porch and in the pillars on either side of the steps.

While this home is larger and more costly than



A FINE EXAMPLE OF THE USE OF FACE BRICK. Note How Effective the Exterior of this House Has Been Made Through the Use of Face Brick, With a Strip of Stucco Under the Roof Projection. For Large or Small Houses Face Brick Over Solid Brick, Hollow Tile or Frame Construction Makes an Attractive Home.

How to Build With Brick

81

those greatest in demand in this era of home building, the same methods of laying up the walls, both of common brick and face brick, are used on small homes. Solid brick walls make a warm, substantial house in the winter and a cool home in the summer. However, many builders like to get the substantial appearance of brick by putting a face brick veneer wall over frame construction. And it is this method of laying up brick that this article will deal with.

Brick Veneer Construction

In the main, the timber framing to be used with brick veneer construction is identical with the best practice for all-frame houses. A number of points, however, require special attention. The relation of the masonry veneer coat to the studding, and the proper bonding of the masonry and framework one to the other, is one of these points.

Consider a house which is to be constructed of a wooden frame, sheathed with inch boards and finished with a brick facing or veneer of four inches. In order properly to veneer the wooden or timber work, it is necessary that the frame should be kept at least six inches from the outside face of the foundation wall. A water-table course of stone should be carried around above the cellar, absolutely level, in order to support the upper structure of brick. Therefore, the foundation wall must be not less than 20 inches thick.

The water-table having been set, and the frame erected to the exact measurements the first five courses of brick may be laid all the way around, as shown by the elevation in the accompanying illustration. After this is done, wire wall-anchors of the shape indicated on the plan, are driven into the studding 16 inches apart, and laid flat on the bed course, so as to tie the brickwork firmly to the wooden frame. At the corners the anchors should be plentifully used.

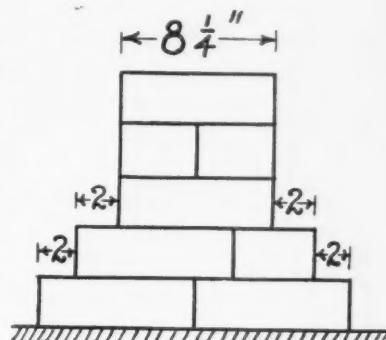
Header Course Strengthens Walls

Should it not be desirable to use anchors and it is found necessary to make a stronger wall, a course of brick headers, English bond, may be introduced on the sixth course, allowing the headers to pass thru the thickness of the studdings and fill up the space between them with rough brick. This method gives

practically an 8-inch wall, and makes a warmer house.

Old brickbats can be used to great advantage. Should a Flemish bond of headers and stretchers be employed, then the bricks should be placed as shown in the dotted lines of the plan. The thickness of the anchors must not be in excess of the brick mortar joints.

One of the boats made for the brick veneer type of house is concerning its warmth and dryness. This comes from ample dead air spaces. A double air chamber is made by leaving an air space between the brick and sheathing.



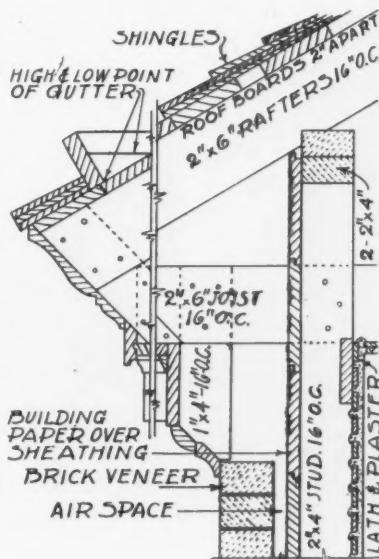
Brick Footing With Two-Inch Offsets.

It is a good idea not to crowd the brick close to the sheathing; better set off an inch, or the thickness of the blind stop, and make it wide enough to lap onto the sheathing. However, the building paper should be put on first; and then, after the window frames are set, it is a good idea to nail a couple of lath an inch or so back of the blind stop and fill in with mortar, pressing it in firmly. This can be done at the time the brick are being laid, with practically no loss of time.

The hollow space serves a double purpose, as it affords a dead air space, and at the same time allows some leeway in correcting unevenness in the framework. It is also a good idea to cut pieces between the joists and studding at the different floors, so as to cut off the circulation in case of fire, as well as to prevent the movements of the ever-pesky mouse.

The anchoring of the brickwork to the sheathing should be done by stapling the wire to the sheathing opposite the studding and about every sixth course apart. The wire should be left loose enough to reach half the width of the brick and to be well bedded into the mortar joint.

Galvanized strips of metal, slightly corrugated to give bond are also much used for wall ties.

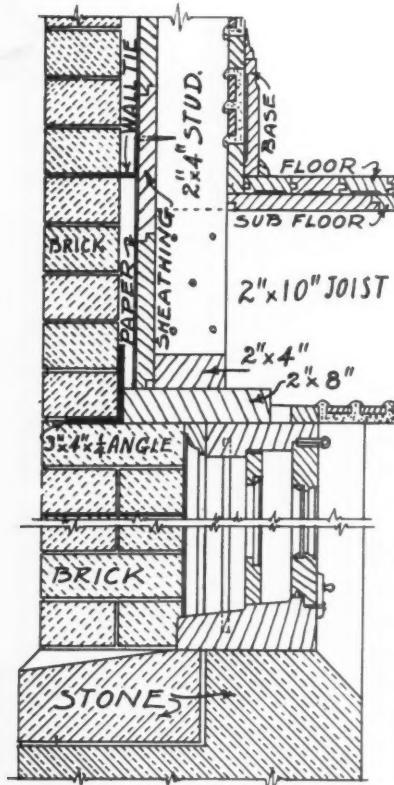


Cornice Construction For a Brick Veneer House

Method of Laying Up Footings

In solid wall construction, laying up the footings correctly is most important. The footings are the wide courses placed at the base of the walls to distribute the pressure of the walls over a greater area of ground. The usual practice is to make the lowest footing course twice the width of the wall it is to support. Offsets of $2\frac{1}{4}$ inches in each superimposed course are then made till the main wall thickness is reached. Where walls are two or more bricks in thickness, the bottom

courses of the footings are frequently doubles. The best practice requires the laying of headers in footings as far as possible, and any stretches used should be laid near the center of the wall. If the soil is soft and compressible, wider footings should be used. Where the loads are extra heavy, it is recommended that each projecting course be made double, with headers on the top course and stretchers at the bottom. The brick used should be the hardest and strongest the market affords;

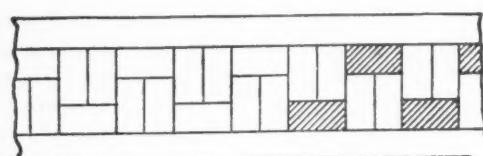


Details of Approved Construction for Windows, Sills and Walls in a Brick Veneer Building.

and special care should be given to the jointing, which should be of cement or hydraulic lime.

Quarter-Sawed Oak Chair Posts at Plain-Sawed Prices

By proper handling at the rip saw, a plain-sawed oak board can be cut so as to yield a slight amount of true quarter-sawed and a large amount of semi-quarter-sawed material. All of this material is suitable for bending; in fact, tests by the Forest Products Laboratory, Madison, Wis., in



An Ornamental Panel Effect Secured With Common Brick. The Two-Color Effect Is Made by Sinking Bricks One-Half Inch from the Face of the Wall, as Shown by the Shaded Bricks.

co-operation with a large chair manufacturer, have shown that the semi-quarter-sawed stock can be bent in the hot-plate bender with less surface checking than either the true quarter-sawed or the plain-sawed stock. This is of particular significance to the chair manufacturer, for it means that the

purchase of 1-inch quarter-sawed oak plank for chairpost stock is unnecessary.

A common type of back post is 1 inch by 2 inches in cross

section, with the quarter-sawed surfaces appearing in the front and back, or narrow faces. Considerable saving may be effected by the selection of as much true and partly quarter-sawed back-post stock as possible from a 1-inch plain-sawed oak board. The flat grained portion of the board may then be used for other chair parts where the flaked surfaces are not essential.

When the chair part to be bent is square, as is frequently the case, it is obviously unnecessary to purchase any quarter-sawed material at all.

An entire plain-sawed board can be worked up into quarter-sawed parts.

Brick Wall Section and Approved Sill Construction

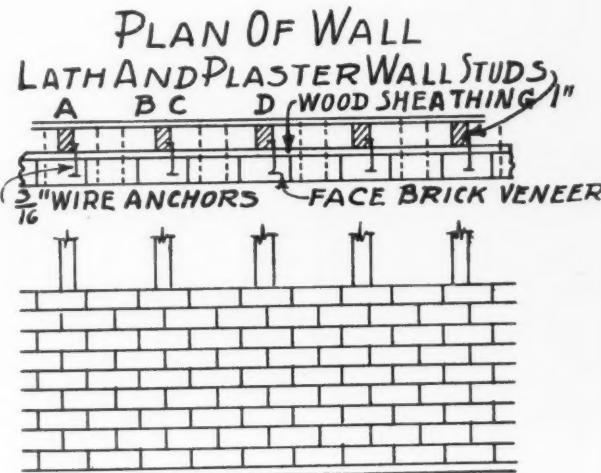
"Your congregation was rather small this morning."

"They only promise to come weather permitting," replied the clergyman.

"But it was fine and clear."

"Yes, that's the kind of weather that doesn't permit—it's too good for golfing."—*Boston Evening Transcript*.

THE Correspondence Department is a clearing house for ideas. Every reader of the AMERICAN BUILDER is invited to make use of it.



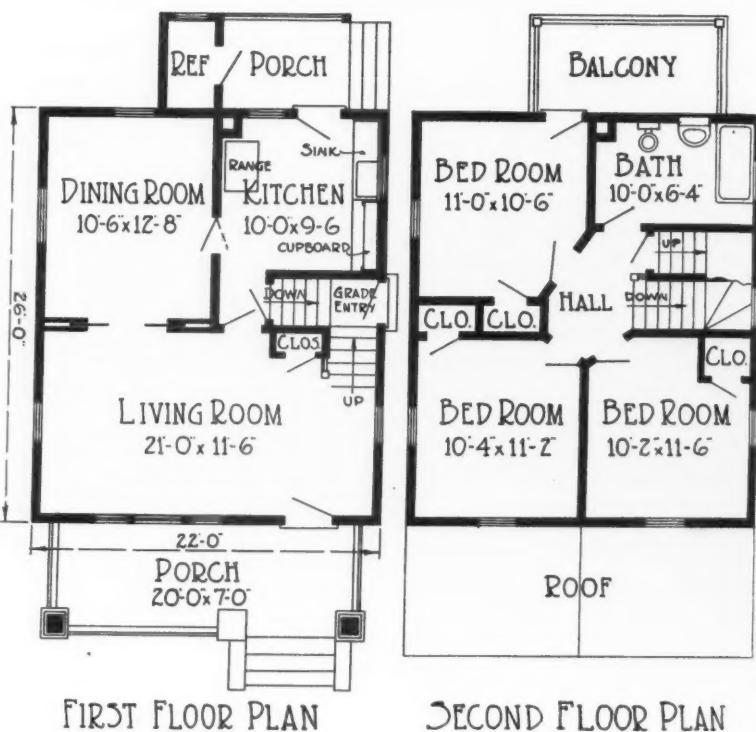
Elevation of a Brick Veneered Wall, Showing Bonding.



THREE-FLAT BUILDING OF BRICK AND TERRA COTTA. Flat building construction is a big part of the city contractor's business, but the conveniences that are to be found in an apartment also have a strong appeal to residents of smaller communities. This design for a three-flat building, with English basement, is modern in every respect. The sun parlor projection, terra cotta trim and general appearance all conform to the up-to-date ideas of what a flat building should be. The dimensions of the building are 30 by 60 feet. Each apartment has six rooms, bath and sun parlor, conveniently arranged, as will be seen by the floor plan. This design will meet the need of the investment builder and the man who wants a home for his family and a building that also will produce an income.

Design for a Six-Room Frame House

THE home design shown on this page is typical of what is popular with home-builders, who want comfortable places to live, but at the same time construct a house that will meet the needs of a majority of people, so that if it becomes necessary to sell the home will be readily saleable. This is a six-room frame house with beveled siding to the second floor sill, shingled sides above and a steep-pitched gable roof. It was designed for Firestone Park, Akron, Ohio, an extensive industrial building project. The perspective shows how attractive this home is, and the floor plan how well the architect has arranged the rooms. The dimensions of the house are 22 by 26 feet, which allows plenty of lawn and garden space on a narrow and shallow lot. The brick pillars of the porch and the concrete block foundation also are attractive features.



FIRST FLOOR PLAN

SECOND FLOOR PLAN



SIX-ROOM FRAME HOUSE. This Design Is Typical of the Homes Built at Firestone Park, Akron, O., a Large Industrial Housing Project that Was Begun Several Years Ago. The House Is of Frame Construction Set on a Concrete Foundation. Its Dimensions Are 22 by 26 Feet, and It Contains Six Well-Arranged Rooms and Bath.



A CONVENIENTLY ARRANGED FIVE-ROOM BUNGALOW. This pretty little California home was designed by W. E. Allen, of Los Angeles, architect. Size, 28 by 45 feet.

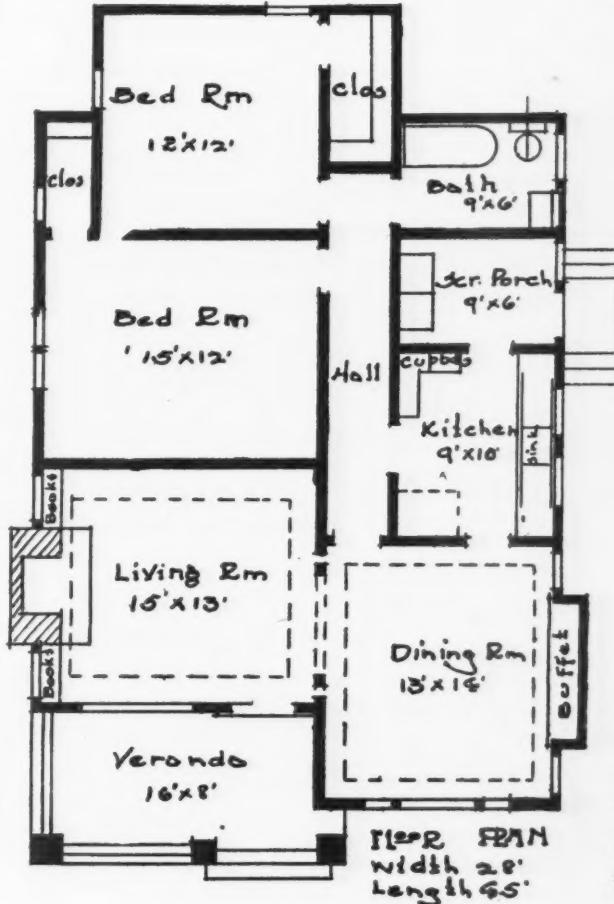
A Conveniently Planned Five-Room Bungalow

By Charles Alma Byers

IN the bungalow here pictured, the walls are sided to the height of the window sills and covered with shakes above, both siding and shakes being painted green. The porch piers and chimney are constructed of clinker brick, and the roof is covered with a gray roofing composition. The attractive little porch on the front is floored with cement.

The rooms are living room, dining room, kitchen, two bedrooms and a bathroom. The ceilings of the living room and dining room are beamed, and the walls of the latter are finished with a paneled wainscot and plate-rail. The woodwork of these two rooms is of pine, stained a dark mission oak color, and the rooms have oak floors. The woodwork elsewhere is enameled white, and the floors are of pine. The living room fireplace is of clinker brick, with a built-in bookcase at either side; the dining room has a built-in buffet; the kitchen is well equipped with cupboards and other conveniences, and each of the bedrooms has a closet. The house has no basement, but is heated with gas radiators. It was built in Los Angeles, California, at a cost (before the war) of about \$1,900. W. E. Allen, architect, of that city, was the designer.

The dimensions of this bungalow are 28 by 45 feet, narrow enough for the ordinary city lot. It is an exceptionally good design for an economical home. While there is no basement under this home as built, space for a heating plant will be wanted in most sections of the country.



Blue Prints of a Seven-Room Residence

PLANS FOR A HOME OF POPULAR DESIGN ARE CONTAINED IN THE FOUR-PAGE SUPPLEMENT THAT FOLLOWS.

STORY-AND-A-HALF houses of the bungalow type are exceedingly popular with prospective home-builders, as they have the beauty that is obtained with long sloping roofs and at the same time have space on the second floor for two or three good rooms. The design shown in the blue printed supplement this month is an exceptionally good one of this sort.

What a pleasing exterior this home has is readily seen by the perspective on this page. The broad front porch, the whole width of the house, and the slope of the roof that extends over the porch give the house the appearance of a bungalow. The dimensions of the house are 36 by 28 feet, exclusive of the 8-foot front porch projection.

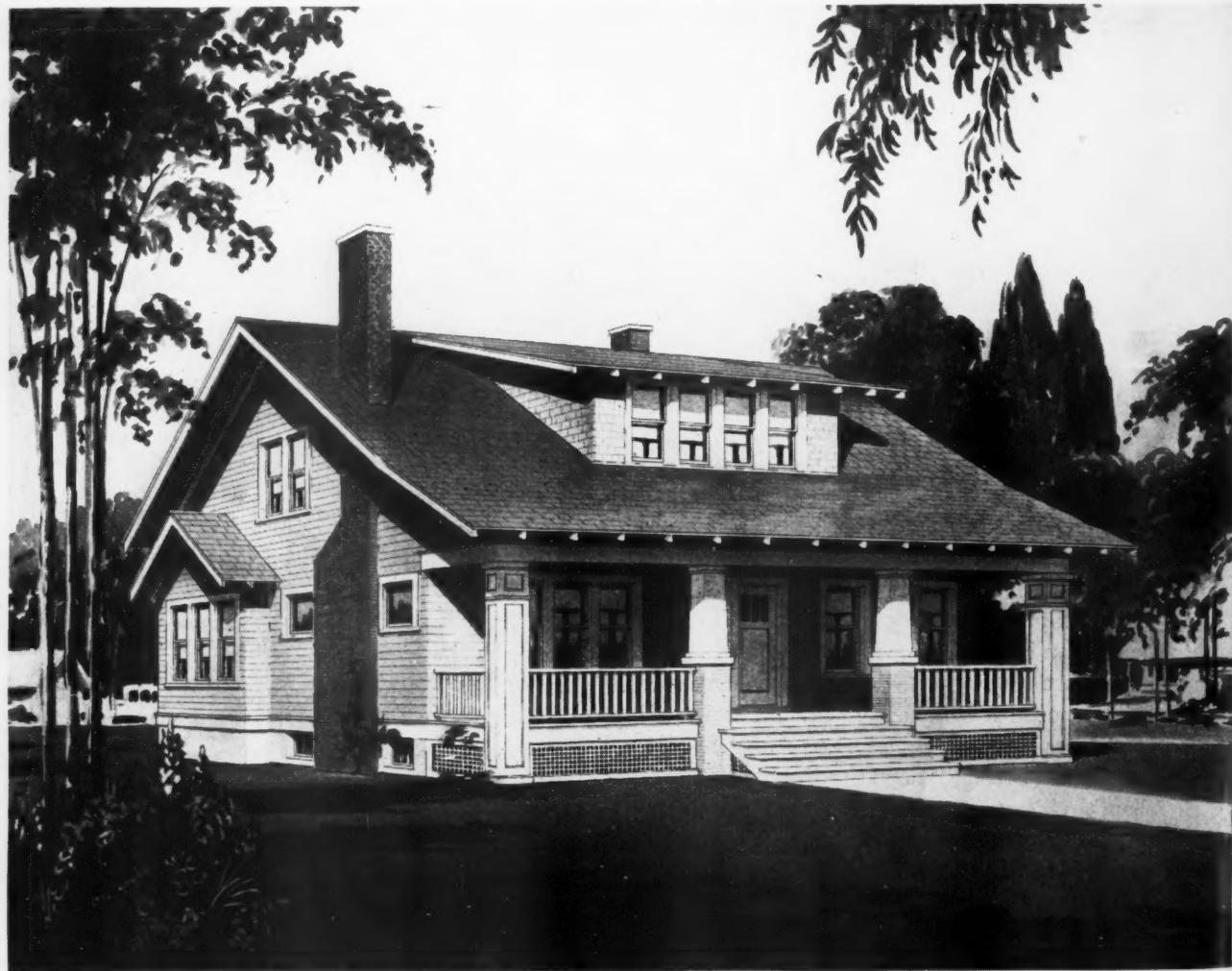
The plan of the first floor is shown on page 1 of the supplement. A central hall leads into the living room, 16 feet 9 inches by 14 feet 9 inches. Back of the living room is the dining room, 16 feet 9 inches by 13 feet 3 inches. Between the dining room and kitchen is a breakfast nook, the side elevation of which is also

shown on page 1. A bedroom at the front of the house completes the first floor plan.

Page 2 of the supplement contains the second floor plan, showing three good-sized bedrooms, with exceptionally large closets, and the bathroom. The basement plan is contained in page 3 and page 4 shows the front and side elevations. Detail of the linen case, a typical door and the medicine case also are shown on page 3.

A study of the floor plans demonstrates what a practical and comfortable home can be built from this design. Modern features have been incorporated in each room, and, at the same time, no space has been wasted. The house is of frame construction, set on a concrete foundation.

This is an exceptionally good design of the sort of home that has been most popular with home builders this year. It is economical to construct; contains plenty of room for a good-sized family, and has great exterior beauty.



SEVEN-ROOM BUNGALOW TYPE RESIDENCE. This Story-and-a-Half House Is a Beauty and of the Sort that Is In Great Demand. Its Dimensions Are 36 by 28 Feet. The House Contains Seven Good Rooms, Four on the First Floor and Three on the Second.

BLUE PRINTED PLANS OF THIS HOUSE WILL BE FOUND IN THE SUPPLEMENT THAT FOLLOWS

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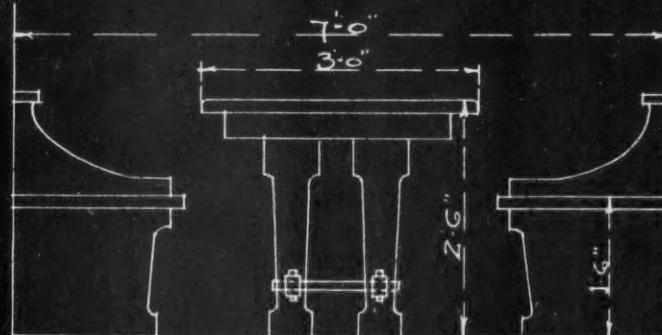
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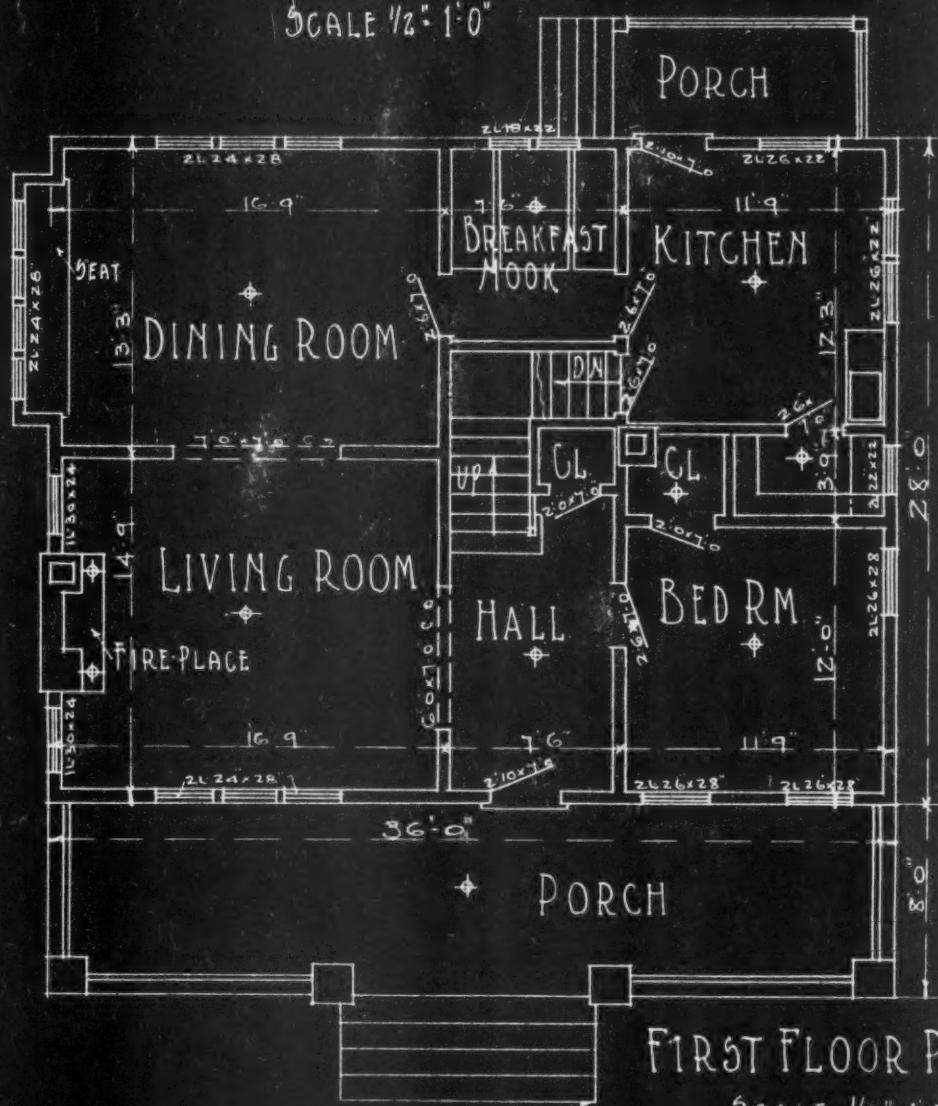


AMERICAN BUILDER BUILDING PLANS



BREAKFAST NOOK

SCALE $\frac{1}{2}": 1' 0"$

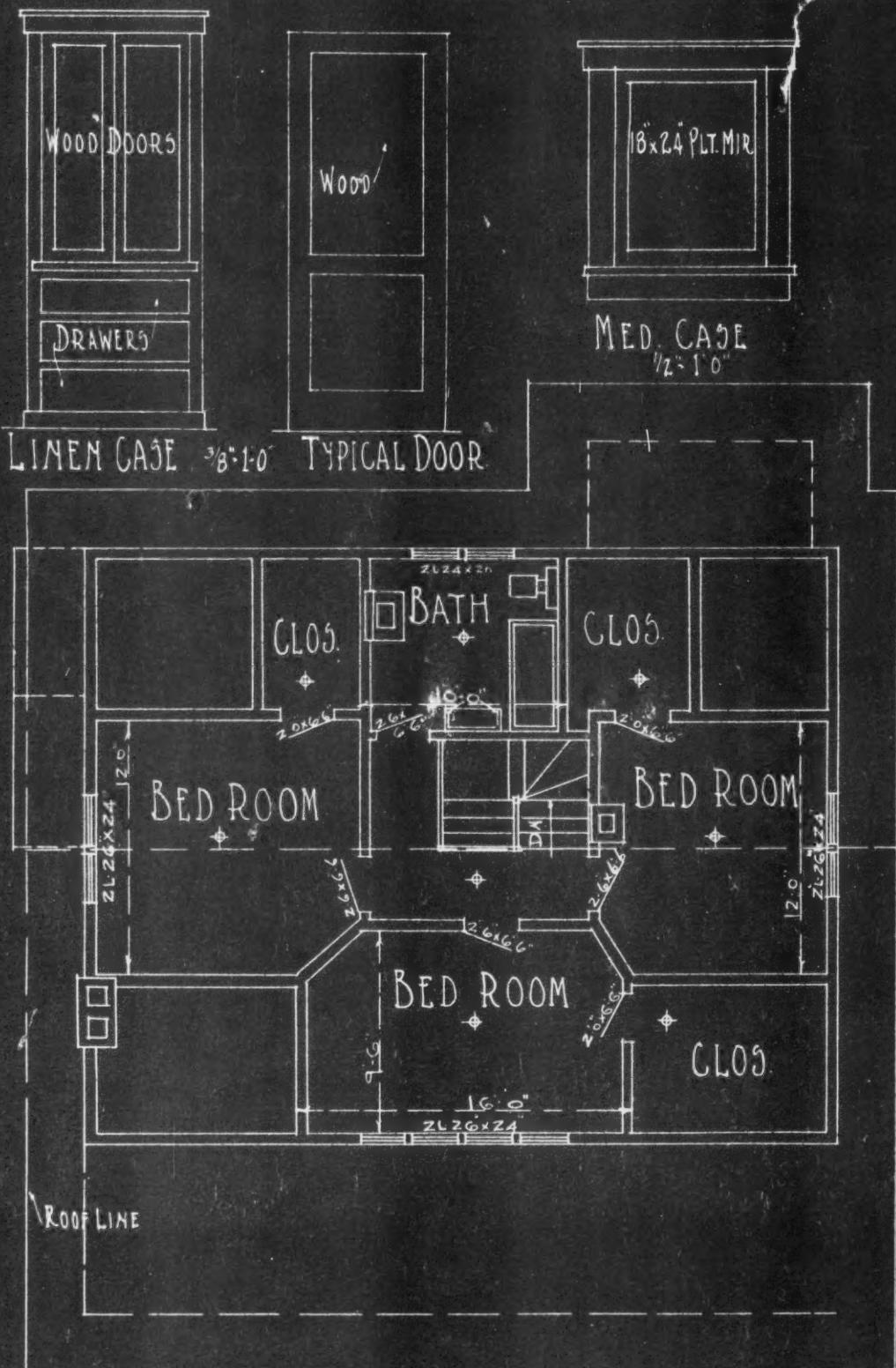


FIRST FLOOR PLAN
SCALE $\frac{1}{8}": 1' 0"$

7 ROOM RESIDENCE

SHEET № 1

AMERICAN BUILDER BUILDING PLANS

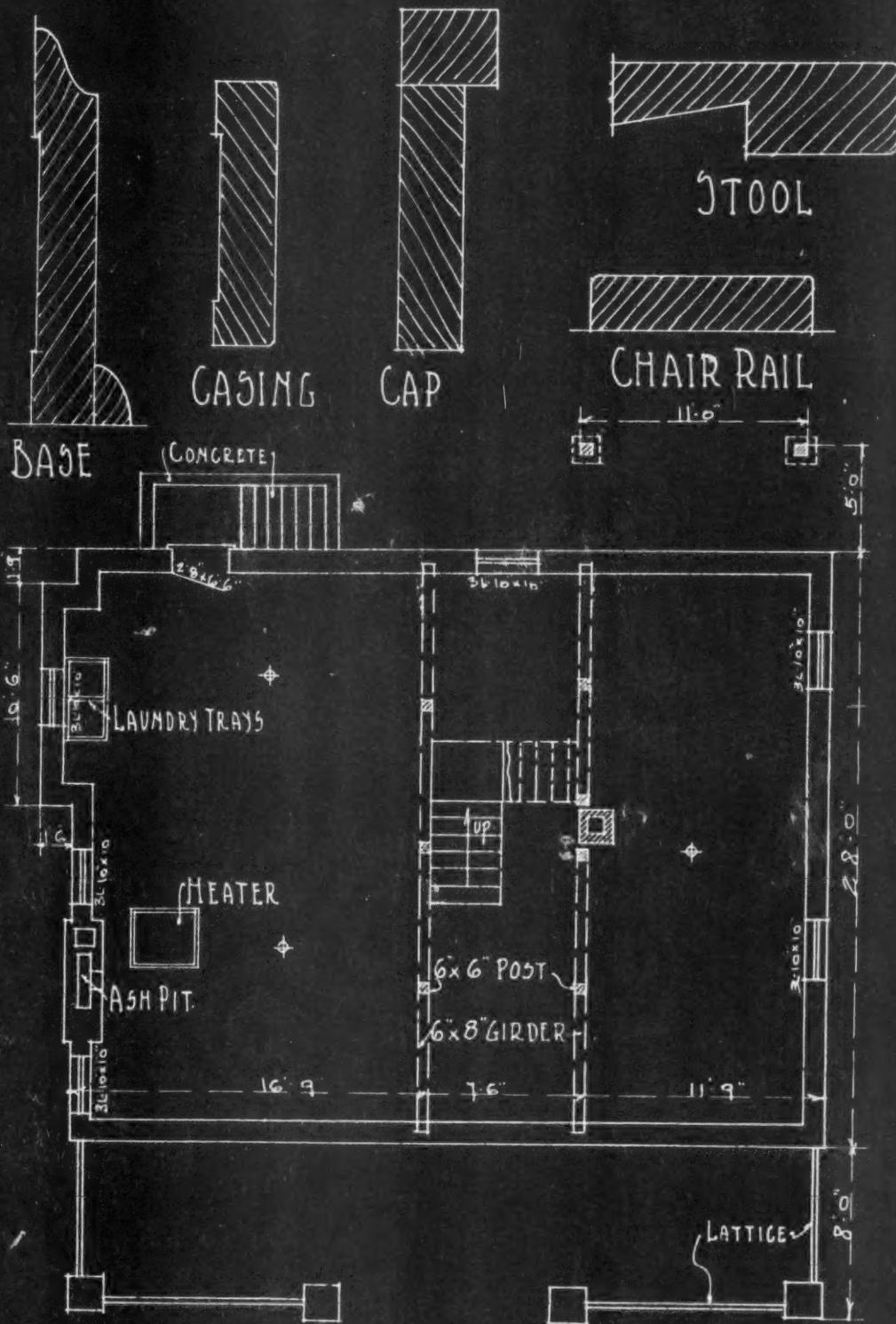


SECOND FLOOR PLAN
SCALE $\frac{1}{8} = 10'$

7 ROOM RESIDENCE

SHEET N^o 2

AMERICAN BUILDER BUILDING PLANS



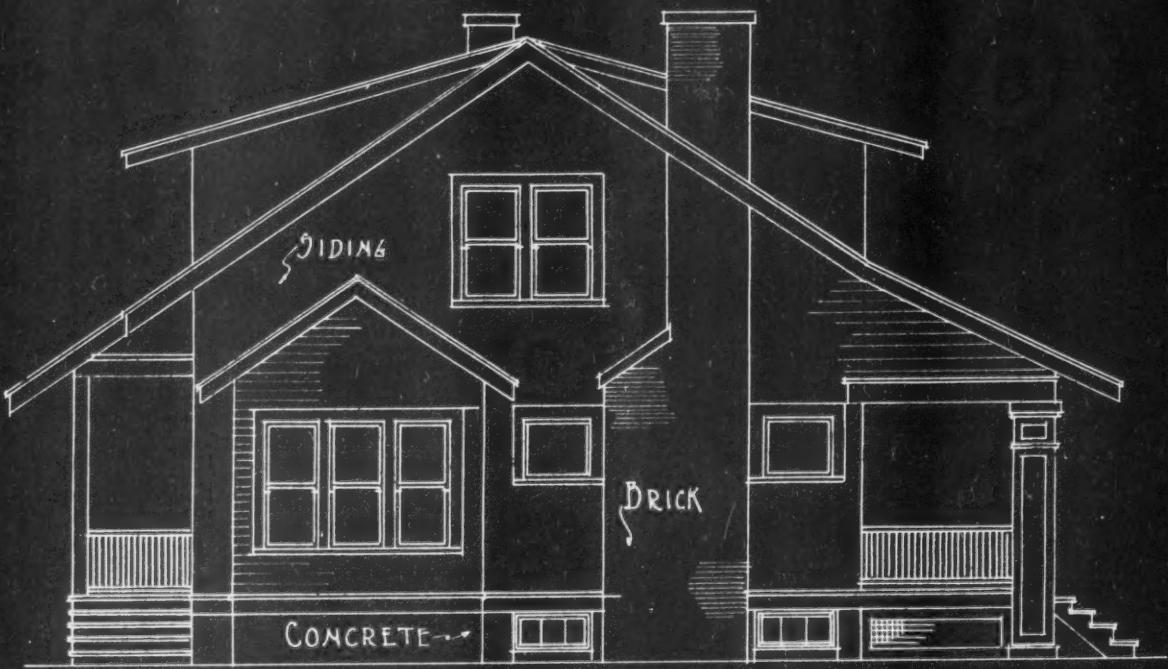
BASEMENT PLAN

SCALE $\frac{1}{8}$ " = 1'-0"

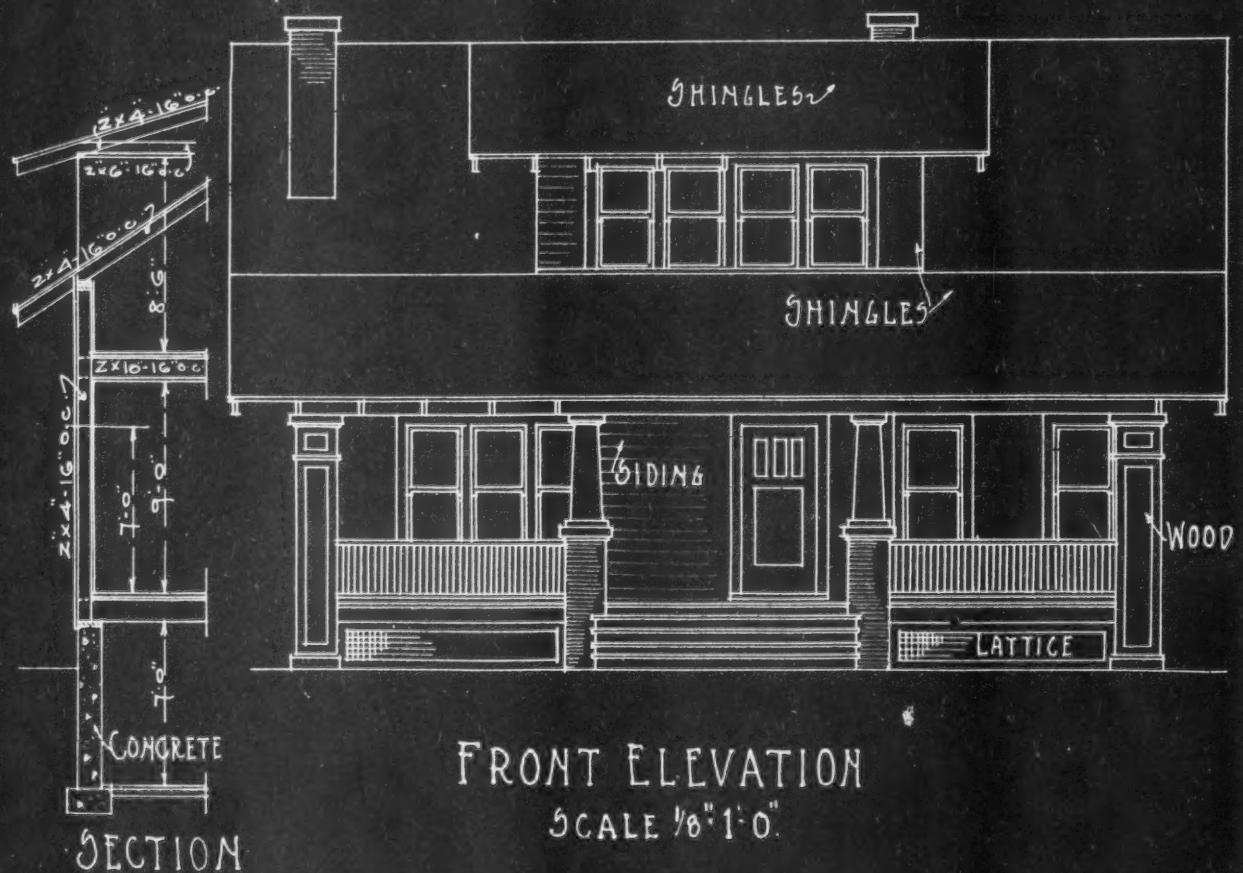
7 ROOM RESIDENCE

SHEET № 3

AMERICAN BUILDER BUILDING PLANS



SIDE ELEVATION



FRONT ELEVATION
SCALE 1/8"-1'-0"

7 ROOM RESIDENCE

SHEET NO 4



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Building a Building Around a Building

DETROIT BANK USES NOVEL METHOD TO ENLARGE ITS HOME WITHOUT STOPPING BUSINESS

WHEN the Highland Park State Bank, Detroit, Mich., erected a new building several years ago, the officials believed that it was ample to supply the concern's needs for many years.

The building was set in the center of the lot, leaving considerable space on the four sides. As it later developed, this was a wise move and made possible a most unique building operation.

The commercial and industrial development of Detroit during the last few years so increased the business of the Highland Park Bank that it became necessary to enlarge its building. The location on the lot of the old building made it possible to triple the area of the bank floors without moving into temporary quarters. This was done by erecting a steel skeleton around the building and, as one side was finished, the offices and desks were moved into that portion and the work continued on another side.

The new building is 50 by 150 feet in dimensions and is of steel construction, with stone exterior and marble floors and interior trim.

The accompanying illustration shows the new building surrounding the old one in the course of construc-

tion. The skeleton steel framework is up, and in the rear can be seen the building nearing completion, altho not ready for part of the bank's offices to be moved into it.

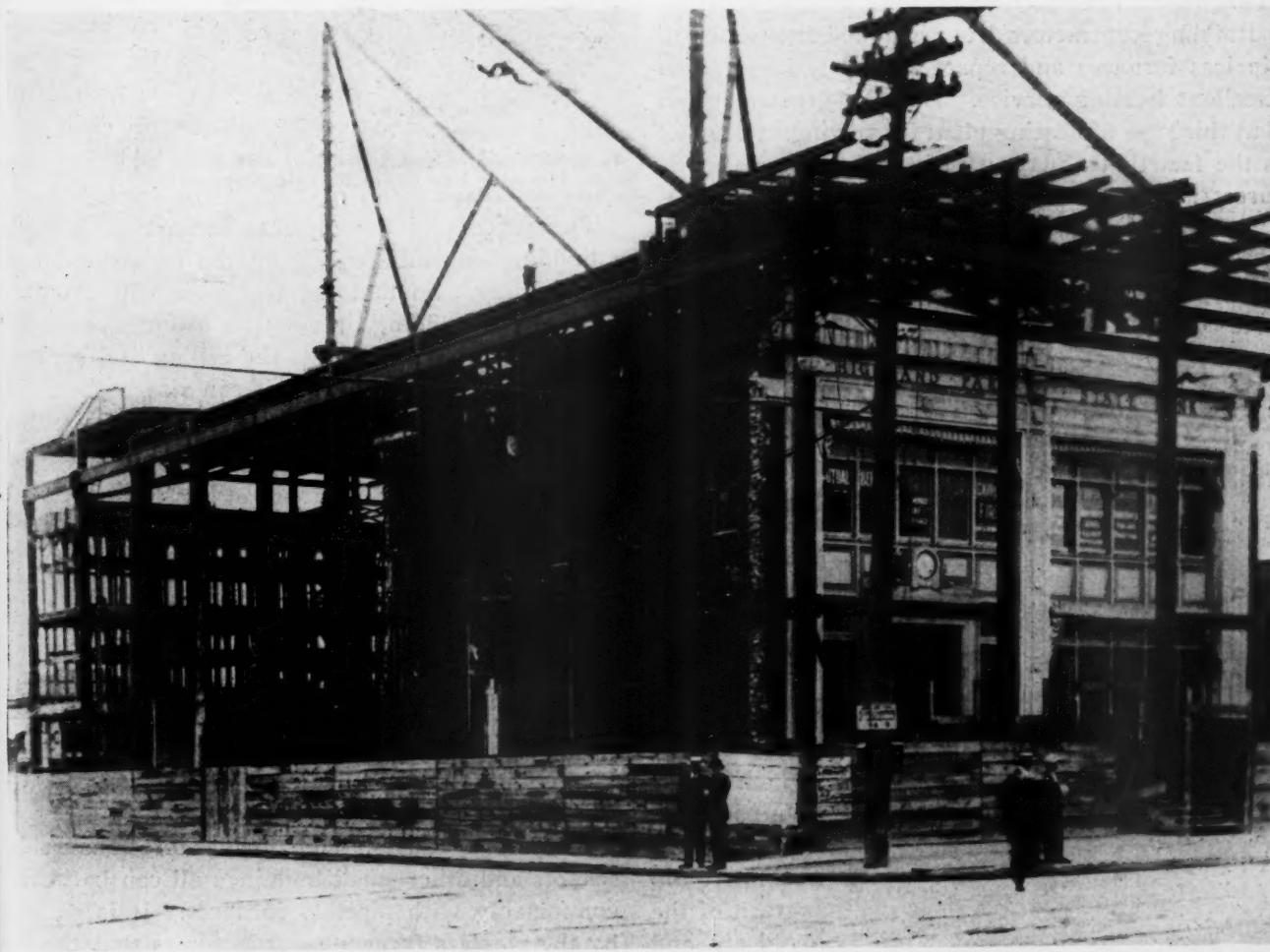
Neither the bank nor the tenants on the second floor were greatly discommodeed by this method of erecting the bank building, which was completed within a short time.



LABOR shortage has demonstrated the enormous value of builders' equipment to thousands of contractors this season. Machinery may not have the ability to think, but it does what is required of it quickly and does it well. The contractor with modern equipment is ready for any and all building jobs.



SHORT cuts in performing different kinds of work save time, and time is really money in these days of higher labor costs. "Let every move count," is good advice to every employer and employee.



AN INTERESTING BUILDING METHOD. The Highland Park Bank, Detroit, Tripled the Space in Its Building by Erecting a Steel Skeleton Around It and Constructed the New Building Without Interference With Business. The Illustration Shows the Steel Skeleton Surrounding the Old Building. As the Walls Were Finished, the Offices Were Moved to that Section of the Building.

Builders Find Pipeless Furnaces Efficient

CONTRACTORS INSTALL MANY OF THIS NEW TYPE OF HEATING PLANT IN OLD AND NEW BUILDINGS AND ENDORSE THEIR USE

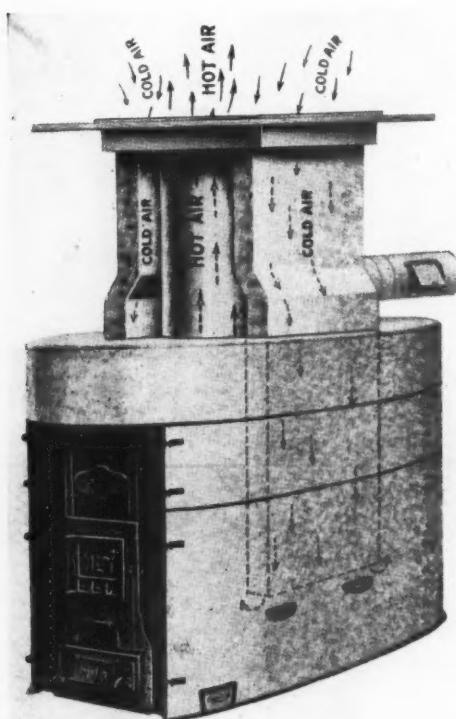
NO new method of applying an old principle has been more successful than that embodied in the pipeless furnace. Warm air is lighter than cool air. Consequently it rises, and, as it becomes cool, falls. In rising, the warm air forms in the furnace a vacuum that sucks in cool air, which, circulating about the firepot, becomes heated and rises again. The operation is a continuous performance.

Stoves operate because of this natural law. And a furnace is nothing more nor less than an enclosed stove, with a pipe or pipes that conduct the warm air to the space to be heated.

Since the pipeless furnace first was put on the market several years ago, it has become increasingly popular. In heating the smaller buildings it has been found to be efficient and economical in its fuel requirements. There also is a saving in installation, because of the elimination of much piping. The heat lost when the warm air is conducted thru a number of pipes has been saved by the use of a single pipe and register, placed directly or nearly so above the furnace.

Contractors Install Thousands of Pipeless Furnaces

Building contractors have installed thousands of pipeless furnaces and report that they have given excellent heating service. But the greatest proof that this type of heating plant is growing in demand is the fact that a majority of the furnace manufacturers now make a one-register furnace



Exterior View of Pipeless Furnace of Modern Design. Dotted Lines Show How Pipes Extend Into Casings, While Arrow Shows Courses of Air, Warm and Cool.

The construction of pipeless furnaces is pictured in the sectional views that are shown herewith. The firepot is enclosed by a double jacket, or casing, the space between the outer and inner casing, which has an opening at the bottom, being for the return of the cold air, and that between the inner cas-

ing and the firepot for the air to become heated as it passes upward to the outlet register.

Are Simple in Construction

The pipe leading to the register is almost as large as the casing of the furnace. The register is built

in sections, the center being for the discharge of the warm air and those on the side for the returning cold air. Thus it will be understood that the furnace itself is simple. There are various methods used to bring this result, and there are many designs of registers, but the principle of all is the same.

Cross-Section of Pipeless Furnace, with Extra Large Firepot. Note How the Air Circulates Between the Casings.

The success of the pipeless furnace in heating a building depends largely on the construction of the building. So that the warm air will circulate throughout the building, it must be of open construction. The air in rising hits the ceiling and spreads until it finds a place where it can rise higher. In order to heat the upper rooms of a two-story building, it must be of open construction. The heat then can travel from one room to another and will force the cooler air toward the floor and thence to the return flues of the single register. In buildings where the rooms are shut off, it is necessary to connect them with registers. Also, when the stair well is closed two registers must be put into the ceilings of the first-floor rooms, one for warm air and one for the cool air, the latter to be placed at the farthest point possible from the register over the furnace.

Efficient for All Sorts of Buildings

Two-story houses, bungalows, stores, churches, schools and other small buildings all can be heated comfortably with pipeless furnaces. It is claimed by the pipeless furnace manufacturers that the use of this type of heating plant will mean a considerable saving in fuel bills, and the claim is based on

the logical basis that much heat is lost by conducting it thru numerous pipes, both in the cellar and in the walls of the building.

A feature of the pipeless furnace that appeals to home owners and contractors is the ease with which they can be installed in old buildings. Even tho there is no basement under the buildings, all that is required to put in a pipeless furnace is an excavation large enough to set the furnace into. As this type of furnace requires no pipes in the walls, there is not the expense and muss of tearing out the walls to put in the pipes. This is an advantage that the owner will appreciate.

The heating plant is one of the most important pieces of the equipment of a building, whether it be new or old. The contractor who erects the building is the logical man to provide the heating plant, as a home, or stove, or school or any other building will not be satisfactory to the owner unless it can be comfortably and economically heated.

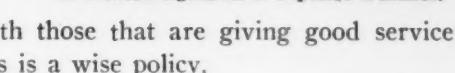
Up-to-date Builders Familiar with Furnaces

The up-to-date builder now has a good working knowledge of the kind and size of heating plant that will meet the requirements of the building he erects. This not only helps him give the owner a satisfactory building, but also provides him with a profit-making opportunity to sell and install furnaces and other heating equipment.

There now is a big demand for pipeless furnaces

and in order to satisfy it builders are keeping posted on the latest developments in pipeless furnaces. The manufacturers have service departments, which will aid contractors to select the size and design that will satisfactorily heat the building that is being erected. Keeping in touch with the developments in this sort of furnace and being familiar with those that are giving good service for their owners is a wise policy.

Cross-Section Showing How Cold Air Returns and Is Heated Again in a Pipeless Furnace.



Some Pointers on Building With Stucco

By Wharton Clay, Arch. Engr.

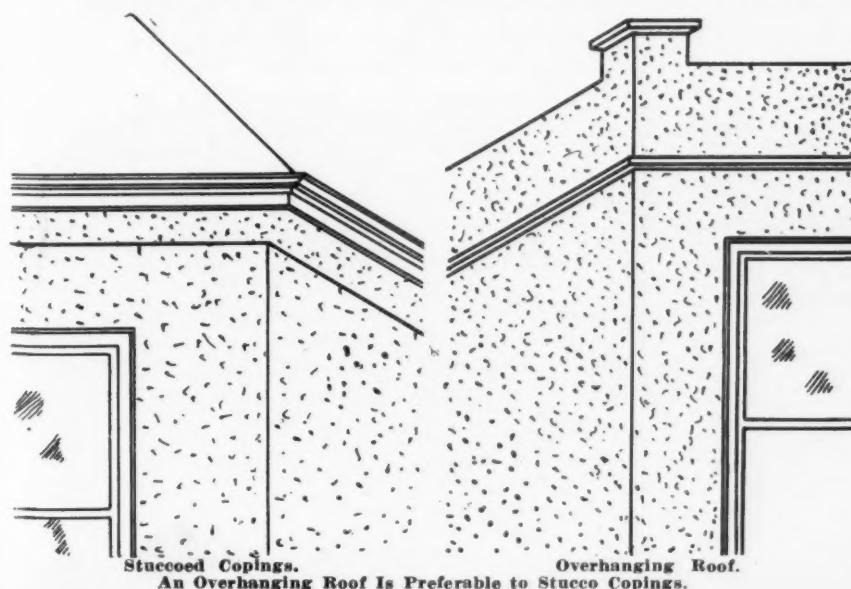
Member of the American Concrete Institute

FROM the earliest records of architectural history, successful building design has always accommodated itself to the material with which the designer has worked. The Greeks made their columns of certain proportions, because those proportions

could not be made more slender with the stone that was available: their columns had to be a short distance apart, because the stone lintels would break of their own weight when the span was increased; and the same principle of relation between design and material

can be found on down thru the ages to modern steel structure with its comparatively thin columns in which an entirely new type of architecture was developed. Then a reaction to heavier structure took place with the advent of the reinforced concrete building where greater depths are needed for this material than when the stronger material, steel, was used. So also must the designer of the stucco residences be guided fundamentally by the natural properties of stucco if his design is to be successful.

The American Concrete Institute Committee on Treatment of Concrete Surfaces, after much delibera-



Some Pointers About Stucco

[September, 1919]

tion and consideration of the long-time practical tests made by Mr. J. C. Pearson, of the U. S. Bureau of Standards, has laid down the following principles:

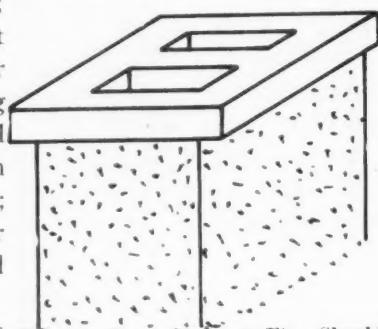
Principles of the Use of Stucco

An overhanging roof is always preferable to stuccoed copings; cornices and other horizontal surfaces should be avoided; water tables, belt courses and similar members departing from the vertical should have as much slope as possible; stucco should never be run to the ground level.

Suitable flashings should be provided over all door and window openings whenever projecting wood trim occurs; cornices, chimney caps, etc., should be built of stone or metal or other similar material, with ample overhang, and provided with drip groove or lip; all should be water tight. Continuous flashing should extend across the wall below, projecting beyond the face of the stucco. The flashing should be so installed as to prevent water from dripping on the exterior surface, and also as absolute protection against interior leakage.

Stucco, as Used with Brick

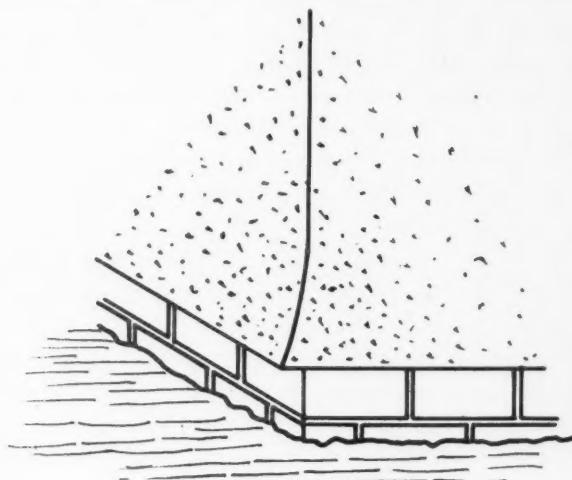
The handsome effects of brick inserted to relieve the stucco may be dangerous if they do not project well from the face of the stucco and are not flashed underneath. Where walls intersect sloping roofs or chimneys, flashing should be extended up and the stucco brought down only to the top of the flashing. Special attention should be given to the design of gutters and down spouts to prevent overflow. All roof gutters, down spout hangers and other fixed supports should be put in place before the stuccoing is done.



Chimney Caps, Cornices, Etc., Should Be of Stone or Metal.

in order to avoid damage.

None of the above principles add to the cost of the dwelling, and they can all be incorporated in frame structures with metal lath as well as in masonry construction. The former construction has the advantage



Stucco Should Stop Above the Grade Level.

of economy and speed in building; especially is this true when the metal lath is stuccoed from the outside and back plastered between the studs with cement, providing a reinforced concrete wall that is strong, economical and beautiful.

Neglect of these principles is comparable to a Gothic architect trying to build a wide nave without buttresses, or an Egyptian attempting to build a skeleton frame building out of granite. A stucco house should not be designed the same as a wood sheathed structure. It requires separate consideration. Each material has its own peculiarities, and the successful designer is the one who does not attempt the impossible, with the consequent misuse of a material which when properly designed is most satisfactory.



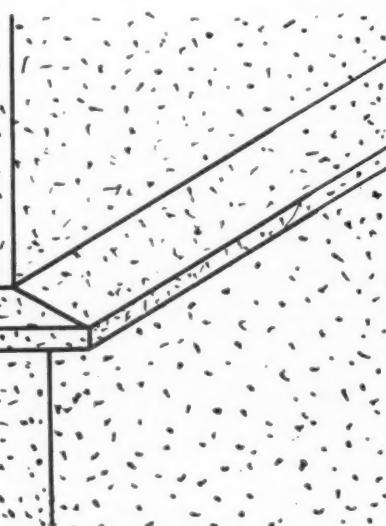
Artistic Concrete Construction

Concrete is becoming increasingly popular as a building material. Office buildings, mills, factories and even dwelling houses are being made of it.

The only objection ever brought to bear against concrete is that it is not particularly attractive. However, this defect is easily remedied. Enterprising paint manufacturers have recognized and met the demand for a concrete paint which serves a two-fold purpose; that is, its application makes a concrete structure not only artistic and attractive to the eye, but prevents moisture from penetrating and discoloring the surface.

It has been only recently that the desirability of painting concrete structures has been admitted. Probably that is the reason for the large number of examples of concrete construction found in all industrial centers, presenting a most untidy, inartistic appearance.

All of these old structures could very easily be beautified and protected from deterioration by the application of one or more coats of a standard concrete paint. It is applied with a brush the same as wooden structures are painted, dries very quickly and greatly improves the external appearance of concrete structures of all kinds.



Water-Tables, Belt Courses, Etc., Should Have as Much Slope as Possible.

STANLEY

Garage Hardware

for

ROLLING DOORS

SHOULD the City Ordinance prohibit the use of outside swinging doors—your customers will want Stanley Works' quality in ROLLING DOOR HARDWARE.

Here it is.

With the combination of doors to meet all requirements operating either right or left hand for entrances, six, eight, ten and twelve feet wide.

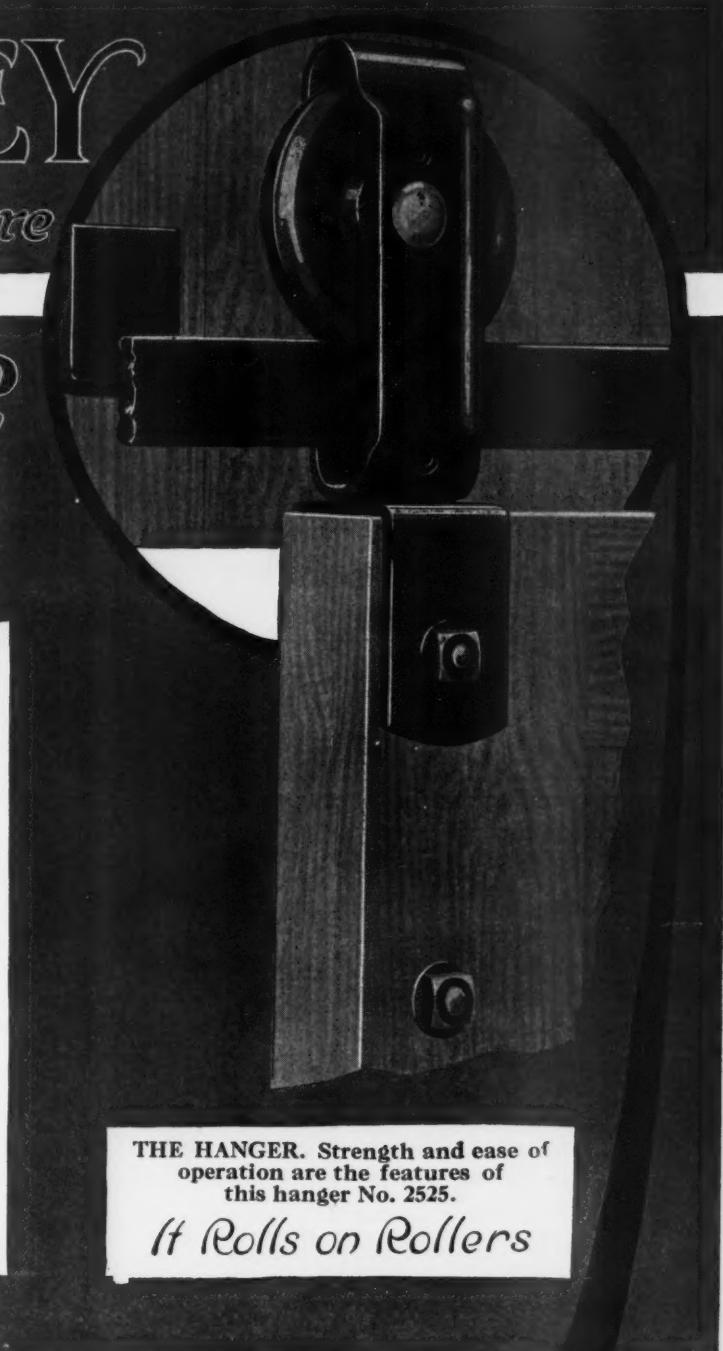
A catalog showing the details of this hardware sent on request.

THE STANLEY WORKS
New Britain, Conn.

Chicago
73 East Lake St.



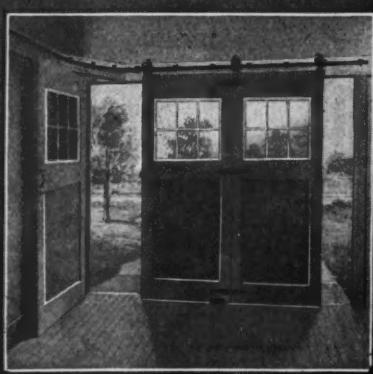
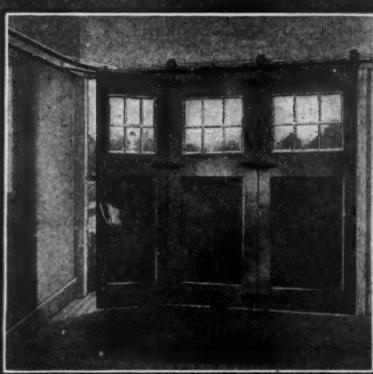
New York
100 Lafayette St.



THE HANGER. Strength and ease of operation are the features of this hanger No. 2525.

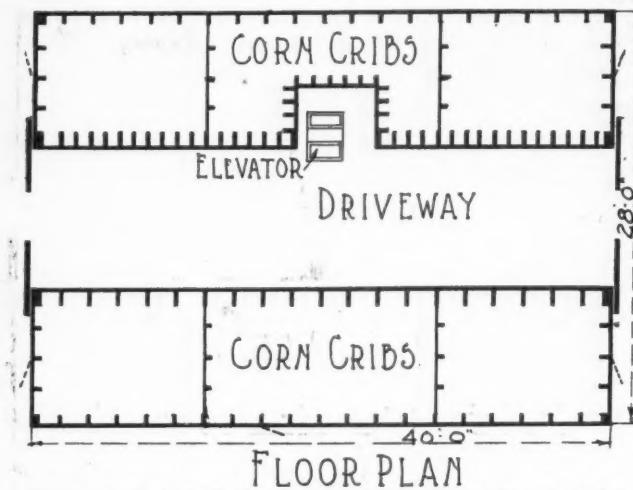
It Rolls on Rollers

In Three Sets

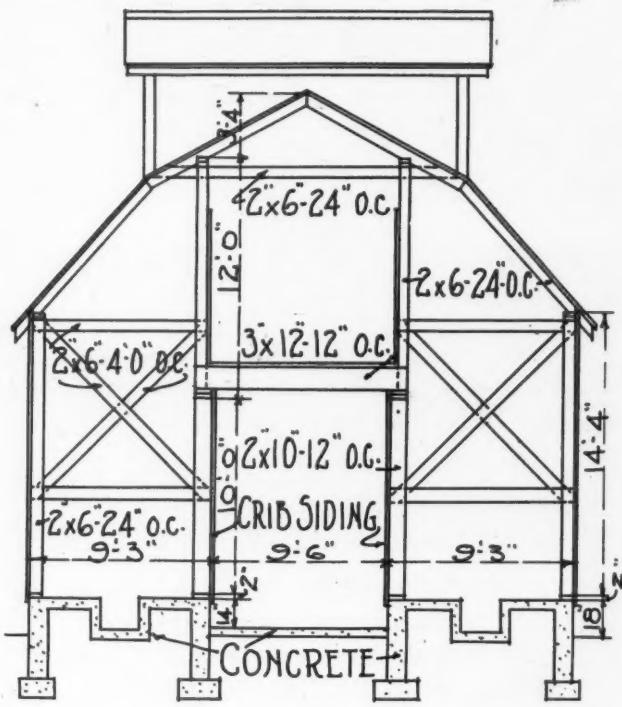


Designs for a High Corn Crib

A HIGH crib, equipped with an elevator, is the modern building for the corn crop. The design shown has slatted sides, permitting plenty of ventilation; a driveway, so that the corn can be dumped from the wagon onto the elevator, and a concrete floor and foundation, making it rat-proof. The perspective shows what a fine building this is; the floor plan gives the location of the elevator and cribs, and the cross-section the materials used and methods of framing.



Floor Plan of High Corn Crib, Showing Location of Cribs and Elevator.



CROSS SECTION

Cross-Section of High Corn Crib.

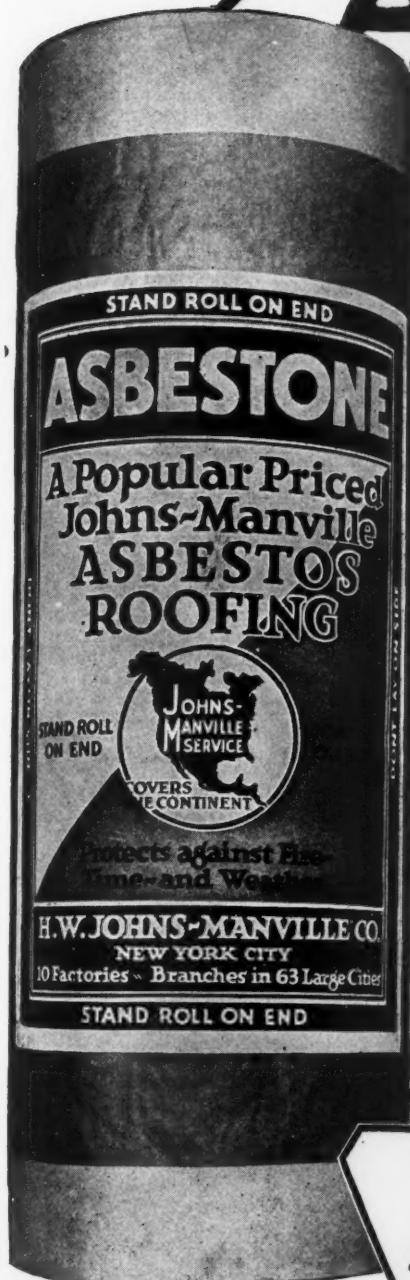


This High Corn Crib Is 40 by 28 Feet, of Frame Construction, with Concrete Foundation and Floor. The Slatted Sides Permit Good Ventilation. It Is Equipped with an Elevator, Making the Putting Away of the Corn Easy and Economical. This Is the Type of Crib That Will House the Corn Crop in Excellent Shape.

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WE believe this is a real piece of news to the roofer. You'll agree that it is when you stop to think what a wealth of possibility Asbestone opens for you.

Here's a roofing priced within the range of the common rubber types, with all the fire, weather and time resisting properties that only pure asbestos fibre can give. And it is far more durable than any other popular-price roofing.

You can now talk both for safety and economy in your town, and back up your statements with Asbestone.

Write for our distribution plan and see how fairly the dealer is considered in the sale of this exceptional roofing.

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proves*



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JOHNS-MANVILLE
Serves in Conservation

Heat Insulations, High
Temperature Cements,
Asbestos Roofings,
Packings, Brake
Linings, Fire
Prevention
Products

JOHNS MANVILLE ASBESTOS ROOFING

Poultry House With Saw-Tooth Roof

POULTRY and eggs, like everything else produced on the farm, have become mighty valuable during the last few years and the business farmer now has his flock in a house that will keep them warm and healthy, and, consequently, highly productive during the cold weather, when prices are the highest.

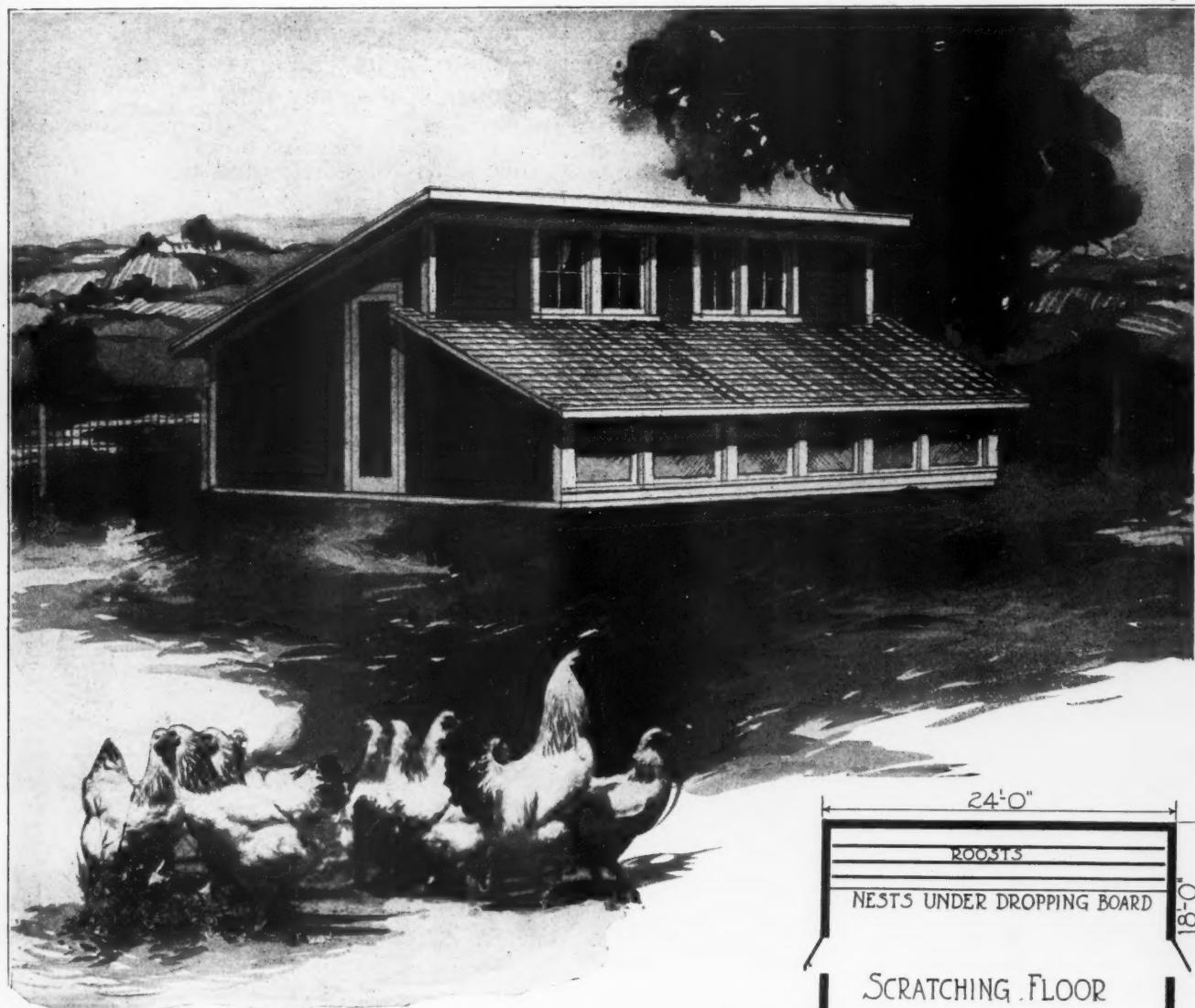
Here is shown a design for a weather-tight poultry house that is designed after the style of the best type of hog house. The saw-tooth roof, with its windows faced so as to get the full effect of the low winter sun, follows the design of the best hog houses. The sun not only keeps the poultry warm, but has a healthful effect on the flock.

It is 24 by 18 feet in size and built in the usual way by using 2 by 4 studding, building paper and clapboards outside, with matched ceiling inside. The idea of placing the windows high up is to let the sunshine into the back part of the house during the winter

and the early spring weeks when sunshine is greatly appreciated by the poultry. It is well ventilated by six muslin covered openings under the low roof in front. This is the natural way to ventilate a poultry house. The air enters under the low roof and circulates back of the roosts.

All the inside paraphernalia of a poultry house should be easily removable. The nest boxes, droppings board, roosts, feed hoppers, dust boxes, drinking fountains—all should be suspended in such a way as to be easily and quickly detached, so that they may be carried out into the sunshine for cleaning, and fumigating if necessary.

The droppings board is made to fit the space at the back of the building under the slope of the shed roof. The nests are supported on standards set onto the droppings board.



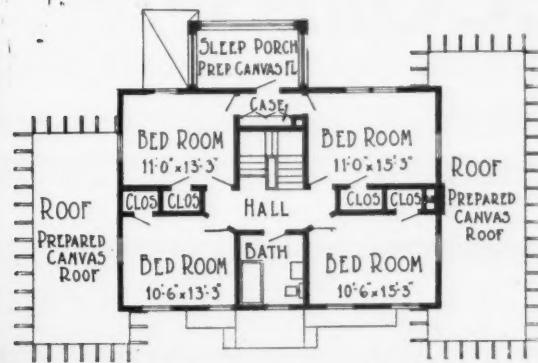
Saw-Tooth Roof Poultry House, Size 24 Feet by 18 Feet. Sunshine, Fresh Air and Clean Quarters Are Things That Make the Poultry Flock More Profitable. These Are Provided in Homes Like This.

Floor Plan of Poultry House.

**IN HOMES LIKE THOSE PICTURED HERE
WHERE CANVAS IS SPECIFIED**

CON-SER-TEX

Canvas Roofing is the Ideal Material



SEE SPECIFICATIONS ON PAGE 67

It is unquestionably the best covering for porch floors and roofs—on sleeping balconies—as a covering for valleys and hips—as a lining for gutters—for durable flashings, etc.

Con-ser-tex is a specially prepared heavy cotton fabric, scientifically treated so that it will not crack, stretch, peel, shrink, rot or leak. It is exceptionally easy to lay—making possible a great saving of time, money and trouble for the contractor. It makes a neat, smooth durable surface which will last as long as the house itself.

Progressive Contractors

everywhere are recommending Con-ser-tex to their customers—there is longer service and more complete satisfaction than any other material.

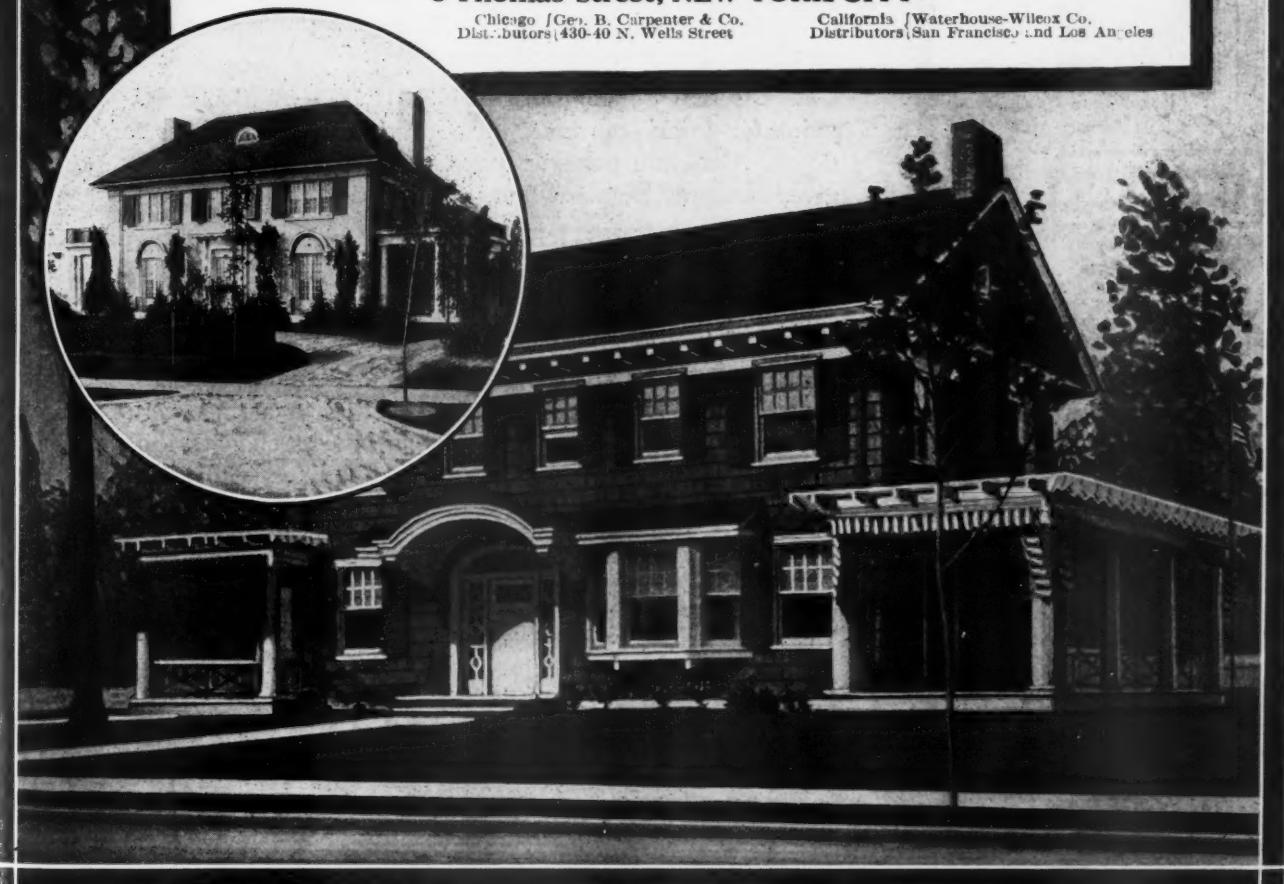
Write today for our interesting booklet "Roofing Facts and Figures." It explains the many uses and the economy of using Con-ser-tex.

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COMBINE ECONOMY WITH

WATERPROOFING—DAMPROOFING—FLOOR HARDENERS—ACIDPROOFING—SMOKE STACK PAINT



THE use of Ceresit Protective Products means economy in efficient building construction. They are easy to use, permanent in effectiveness and uniformly satisfactory in their protective value.

CERESIT WATERPROOFING COMPOUND—A plastic paste for waterproofing concrete work, cement mortar and cement stucco. A few pounds of Ceresit per batch permanently prevents water penetration, no matter how great the pressure.

CEM-BRIC COVERING COMPOUND—A decorative waterproof paint for brick, cement, stucco, and masonry surfaces, and concrete floors. Cem-bric not only penetrates and seals the surface pores, but gives an attractive paint film. It is made in colors.

LUXSTAR INDUSTRIAL ENAMEL—A pure white paint-enamel for general work, particularly adapted for industrial work, offices, schools, churches, creameries, or wherever a pure white, light reflecting surface is desired.

INDURITE LIQUID HARDENER—A liquid chemical treatment for concrete floors. Flush Indurite over the floor surface, scrub it in, wash up, and the job is done. This simple process changes the floor surface into a flint-like substance of extreme hardness and endurance, at the same time making the floor proof against dusting.

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Manufacturers of Waterproofing, Damproofing, Waterproofing

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BRICK AND CEMENT PAINTS—PRESERVATIVE PAINTS

PERFECT WATERPROOFING is essential in every class of construction. Basement, tunnels, pits, reservoirs, swimming pools—wherever water is to be kept in or out. Ceresit Waterproofing Compound has been the standard waterproofing for years. Manufactured concrete products such as burial vaults, etc., can be permanently sealed with Ceresit.

There are 18 Ceresit Protective Products. Special protective paints and coating can be made to solve any problem of building protection. Get on our mailing list. It's the simplest way to receive Ceresit literature describing all these materials.

Our 32-page catalogue (size 8½" by 11") describes the 18 Ceresit Protective Products. Send your business card or write on your letter head and it will be mailed you.

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for Houses, Farm Buildings,
Stores, Garages, etc.



Conducted by
H. S. BRIGHTLY.
Hollow Building Tile Con-
struction Engineer

If you will send us a plan or sketch of the building you are thinking of erecting, Mr. Brightly will tell you about the sizes, shapes and quantities of hollow building tile that will best serve your requirements.—EDITOR.

Hollow Building Tile Construction

PROPER METHOD OF PLACING WINDOW AND DOOR OPENINGS IN HOLLOW TILE WALLS; PLANNING THE LAYOUT OF COURSES TO AVOID ODD SIZES AND CUTTING

By **H. S. BRIGHTLY**

LAST month the article treated on the bonding of corners in hollow tile walls of various types and this month the details for bonding and finishing of walls around door and window frames and other openings for similar hollow tile walls will be given as promised. Last month's article should, therefore, be read and considered along with this article in order that a full understanding of the subject may be obtained.

The placing of window and other openings in hollow tile walls or adapting the use of hollow tile wall construction to a previously fixed or desired window spacing and the question as to best methods of layout and details for bonding is naturally divided under two headings: *First*, that of walls which are to be stuccoed, veneered with brick or stone, or otherwise faced and in which the tile construction will not be exposed and the running bond or breaking of joints in the courses required only for strength; and, *second*, that of walls built entirely of hollow tile which is to be

left exposed to the weather and for which the bond must serve both for strength and appearance.

Generally a smooth or texture face tile is used for this latter purpose, altho it is not uncommon for the ordinary structural tile to be used, particularly in connection with farm buildings. There is no valid objection to such use of the ordinary building tile for any rough or unfinished structure, providing the tile is of the hard-burned variety having a low absorption value and preferably has little or very shallow scoring on the faces. Hollow tile having a deep scoring to form key for stucco and plastering do not look well for exposed work, and when such tile are laid on the side the deep scoring grooves will tend to catch the rain water and assist it in finding any loop-hole or porous spot that may unavoidably occur in the mortar joints. They also form ledges to catch and hold the snow which may melt and then freeze and subject the wall to additional rigors in our cold Northern climates. This objection is overcome by setting such tile on end

and it is, therefore, best when using a tile with deep scoring for exterior walls without stucco or other finish, to use a shape and size of tile that will permit some to be laid on end. With stuccoed or brick veneered walls it does not make any difference which way the grooving runs.

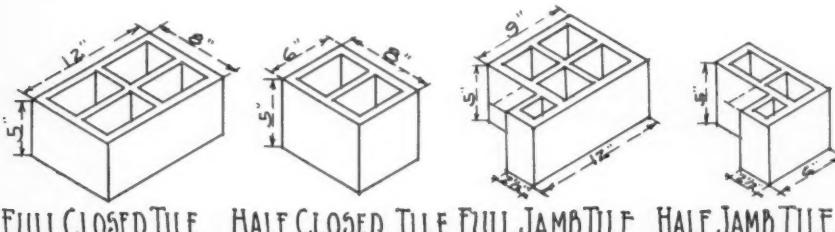
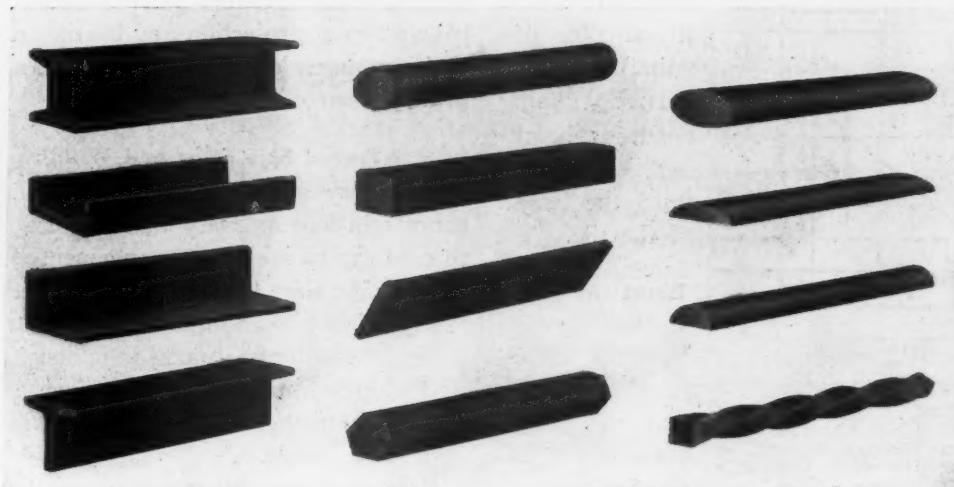


Fig. 1. Jamb and Closer Tile for 8-Inch Walls of 8x5x12-Inch Hollow Tile.

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Any bonding that gives suitable strength to the wall will meet the requirement of the first instance, while only a bond which combines with this an even working out of the courses between openings, conforming to and aligning with the running bond throughout the balance of the wall, will generally be considered satisfactory. For this latter reason a 6-inch running bond is usually preferred, having the joints between the tile in one course occur midway over a tile in the course below, altho a very pleasing effect may be

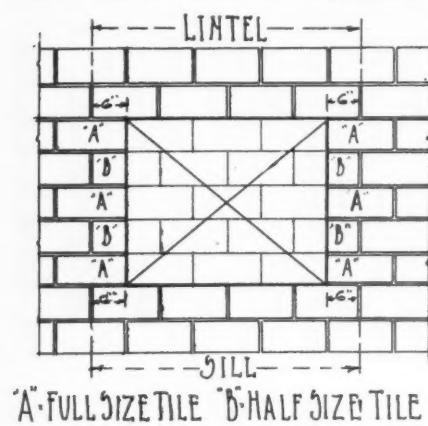


Fig. 2. Diagram Showing Placing of Opening in Hollow Tile Wall Having a 6-Inch Bond Between Courses.

as it simplifies the working up to and bonding around openings, for in any wall in which a finished jamb or reveal is required at openings, it is customary to use two shapes or sizes of tile—one the full 12-inch length and the other a short length to accommodate the running bond of wall courses. These are referred to as "full closers" and "half closers" where the end face gives a straight reveal, or "full jambs" and "half jambs" when the end face is rabbeted to form a recessed reveal, to provide for box window frames. Typical "jamb" and "closer" tile for an 8-inch thick wall built with 8 by 5 by 12-inch building tile are shown by Fig. 1.

Naturally these shapes must be made to some standard length and as the full jambs and closers are made to conform with the standard length of the regular building tile, the short jambs and closers are accordingly made to half that length, or half the length less one-fourth inch to allow for thickness of vertical mortar joint. These sizes, therefore, call for a 6-inch running bond in the wall courses.

The advantage of this bond is explained by the accompanying diagrams, Figs. 2 and 3, which show the placing of an opening on walls that have two types of running bond. From diagram, Fig. 2, having the vertical joints between tile in alternate courses evenly staggered, giving a 6-inch running bond, it will be noted that only two shapes are required to work up to opening, the full length tile marked "A" and the half-length marked "B," also that the sill and lintel will have an even projection and bearing each side of opening. While from diagram Fig. 3 having the vertical joints between tile in alternate

courses staggered one-third length, giving a 4-inch running bond, it will be noted that at least three shapes are required to work up to opening, the full length tile marked "A," the one-third length tile marked "B" and the two-thirds length tile marked "C." Even if the one-third length (short jamb or closer) "B" were used on both sides of opening a third shape or 4-inch filled piece, marked "D," would be required to maintain the bond as shown. This would be a 4-inch long cut of the regular 8 by 5 shape. It will also be noted that the sill and lintel would not have an even projection and bearing on both sides of opening, unless odd length filler pieces were also used in these courses.

Proper Size Door and Window Frames

It is very seldom that the layout of openings and courses in any ordinary building cannot be arranged to conform to the even arrangement shown by Fig. 2, by adopting sizes for the door and window frames that will conform to multiples of full or full and half length tile with allowance for joints. This gives steps of $6\frac{1}{4}$ inches in width of openings. The subject of standard frame sizes and details will be treated on in a later article.

Where an even arrangement is effected the cutting of tile on the job is practically done away with and this result should always be aimed for, as it means no waste of material and a saving in labor. Ideas that buildings which are pleasing to the eye and entirely satisfactory from an architectural standpoint may not be obtained when limited by this factor are not based on fact. A little previous study in the placing of openings is all that is required.

Bonding Walls at Openings

Now to consider the several types of wall for which corner bonding was described in the last article:

Having already referred to the 8-inch wall of 8 by 5 by 12-inch building tile, where jamb or closer shapes are used, the details for which are amply illustrated by Figs. 1 and 2, there remains the question of work-

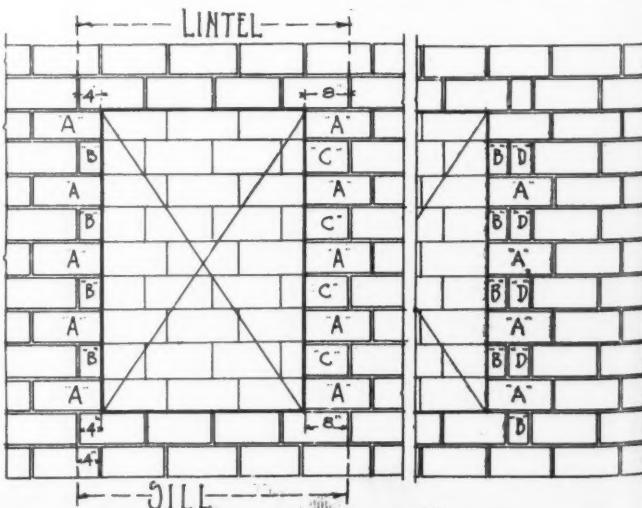


Fig. 3. Diagram Showing Placing of Opening in Hollow Tile Wall Having a 4-Inch Running Bond Between Courses.



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ing up to windows with this type of wall where the jamb or closer shapes are not available. In such cases the simplest method is to use the regular 8 by 5 by 12-inch tile for full closers and order the required quantity of

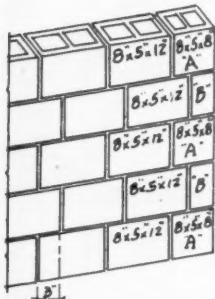


Fig. 4. Jamb Detail for 5-Inch Walls of 8x5x12-Inch Hollow Tile

three-fourths inch with cement mortar. The tile are set up on end on a smooth broad plank and a thin mortar poured into the cells to the required depth.

Working up to opening by using common brick, for farm or other rough buildings where brick is also to be used for bonding corners, was described in the last article. This is one of the instances where the 4-inch running bond is the best to use thruout the wall.

With the 8 by 5 by 12-inch laid on the 5-inch side having the 8 by 5 shape cut in 8-inch length for corners, this same size that is used for corners may be used at openings, as shown by Fig. 4. Tile marked "A," being same as corner tile and tile marked "B," this same shape tile cut off as indicated, based on a 3-inch running bond thruout wall. If the alternate method of closing the ends of cells with cement mortar is used then 9-inch length should be ordered for the short closers. If a 6-inch running bond is used then the short closer would be made from 6-inch lengths instead of 9-inch lengths and 9-inch length, as shown in previous article, would be required at corners.

For 4-inch walls of 4 by 8 by 12 the details for working up to windows are about the same, the 4 by 8 by 8 corner tile would be used for full closer and by crowding the vertical joints in alternate courses, a little to gain one-half inch, this shape tile with one of the cells cut off (leaving a tile 4 by 4 $\frac{1}{4}$ by 8 inches) used for the short closer.

For Garages, Poultry Houses, Etc.

For 5-inch walls of 4 by 5 by 12-inch tile the 8 by 5 by 4 corner shape would again be used for closer and half-closer, cutting same off to a 5-inch face, in a similar manner to that indicated by Fig. 4 for the 8 by 5 by 8 shape. For 4-inch walls of 4 by 5 by 12-inch tile the 4 by 8 by 4 corner shape would also be used for closers and half-closer, in the same manner as for walls of the 4 by 8 by 12-inch tile. As an alternate in both cases the ends of tile could be filled with cement mortar, using the 9 and 12-inch lengths for 5-inch walls and 8 and 12-inch lengths for 4-inch walls.

For 4-inch walls of 4 by 12 by 12-inch tile a corner block is seldom used, as this tile lapped at corners gives a 4-inch running bond and the short closers

would be made by cutting off the required portion of the same shape. This also applies to 3 by 12 by 12-inch tile, and where these shapes were set on the side thruout wall the tile at corners and jambs would be naturally set on end.

If a 6-inch running bond were required with these shapes it is only necessary to cut off the required portion to form the corner tile and half-closer tile, as shown by Fig. 5.

For the standard 8 by 12 by 12-inch load bearing tile, or, in fact, for any thicknesses of tile having 12 by 12-inch face, special closer tile are not required and the half-closers are generally made by cutting off the required portions, depending on the corner detail and consequent running bond that is used, which preferably should be 6-inch. Special jamb and half-jamb shapes similar in section to those shown in Fig. 1 are made for 8, 10 and 12-inch walls and in some instances for 6-inch walls by nearly all manufacturers who produce end-construction load bearing tile. These jamb and half-jamb shapes are based on the full and half-

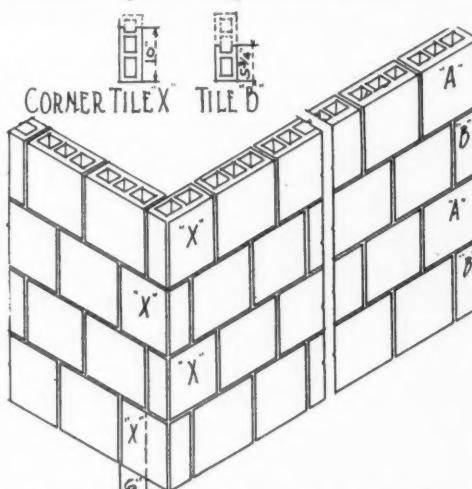


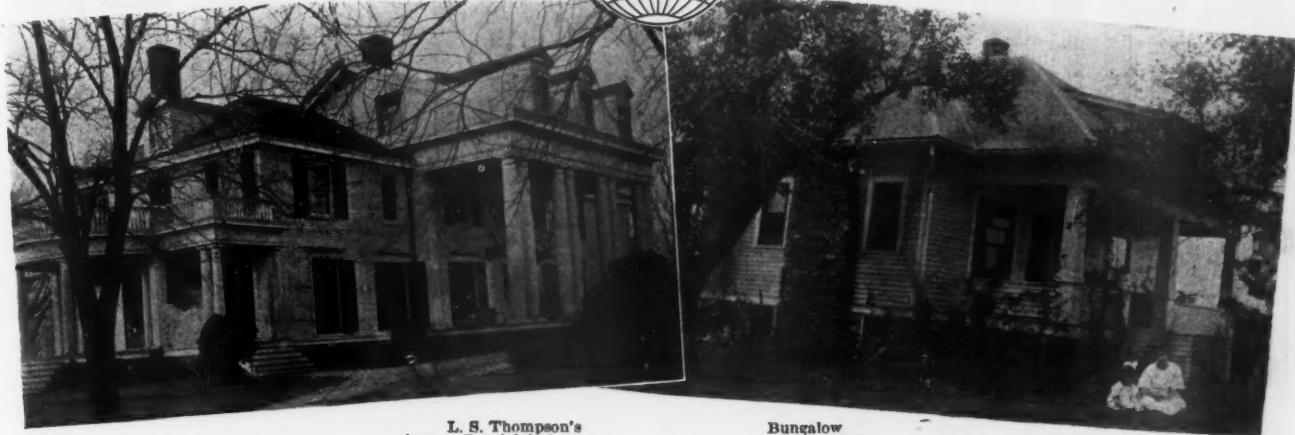
Fig. 5. Corner and Jamb Detail for 4-Inch Walls of 4x12x12-Inch Hollow Tile. Detail for Wall 3x12x12-Inch Hollow Tile Would Be Similar, Excepting that Corner Tile "X" Would Be Cut As Close to 9 Inches as Possible.

manufacturers make a jamb tile for 6-inch walls in connection with which it is usually necessary to have a backband or return to wall on the inside trim at windows to accommodate the depth of box frame, unless the plastering is furred out from the tile. Therefore, where box frames must be used with a wall less than 8 inches in thickness it is best to use the "Pennsylvania Colonial" detail, exposing the full outside casing of box in the window opening, a detail which will be given in a later article on window frames. Six-inch thick walls, however, are seldom used for residences and other finished buildings.



THE extensive use of the Government made of hollow building tile in its housing projects has made this building material more popular than ever. Hollow tile for homes, as well as manufacturing plants and business buildings and for farm buildings, is in great demand now.

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L. S. Thompson's famous Brookdale farm home, Red Bank, N. J.

Bungalow of J. B. Kell, Wooster, Ohio

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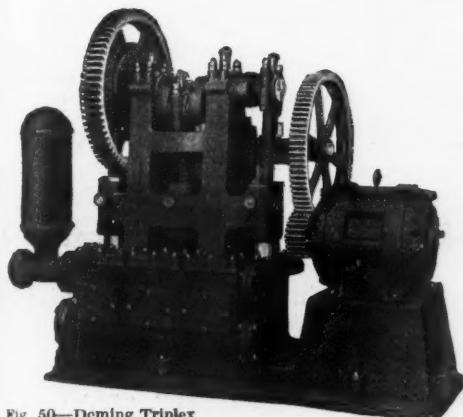


Fig. 50—Deming Triple Power Pump



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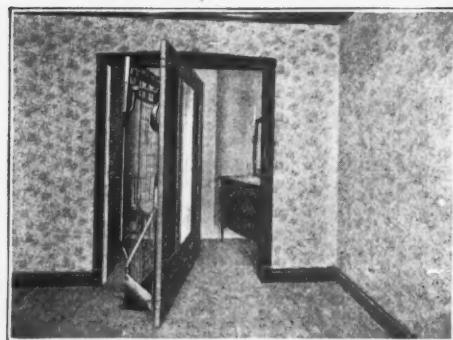
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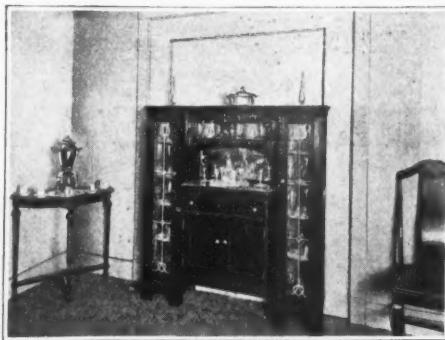
BUILDING HOMES THE LACHMAN



Above is a Lachman Pivoted Wall Bed when partly open. Note the easy access to the dressing room. The revolving panel moves easily and silently on a pivot. Furniture may be attached to the front of the bed as shown on the illustration to the right. Other pieces may be substituted for the buffet shown here.

Every month has seen an increase in the cost of building materials and the predicted drop in prices seems farther away than ever. The labor surplus, too, has proved to be a myth. High prices—high wages—scarcity of materials and

labor have brought conditions to a point where the small home or apartment must be made to provide all of the accommodations of the larger ones. The one most successful means of bringing this about is the space saving bed. They eliminate the bedrooms and make the living rooms, libraries and dining rooms work both day and night.



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Above is Lachman Pivoted Wall Bed equipped with coil springs. This is only one of many types of springs that can be used with the bed. At the left is a Lachman Recess Wall Bed. This type is used where the pivoted style bed is not practical. It requires a recess of very small depth.

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CORRESPONDENCE



Questions Answered and Ideas Exchanged.

Our Readers are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders

Wants to Know How to Get Cut of Cripple Rafters

To the Editor:

Riddlesburg, Pa.

Would some of the readers please tell me thru the question and answer department how to obtain the side cut of cripple rafters going up the valley, nailing them on the old roof, not using a valley rafter? Say, I was connecting an L to the old part. The old part pitches eight inches to the foot and the new six. What would be the side cut of the cripples?

I am a new subscriber and think the American Builder is the best magazine of its kind I have ever read.

KARL REPLOGLE.

How to Waterproof Concrete Cistern

To the Editor:

Enumclaw, Wash.

Please find enclosed check for \$2.00 for subscription for your paper for one year.

I have been to a good deal of bother trying to get your paper regularly and they have been costing me about \$2.65 apiece, as I have to travel about 40 miles to get one. The news agency will not send them to us. Enumclaw is a town of 2,200 people. I have in my office at the present time over \$8,000 worth of buildings (business buildings). I want to start a home-building campaign here, and I want all the information that I can get in regard to home building, also farm homes. This is a lumber country and there is not one in twenty that owns his own home. I was reading an article in the July issue in regard to waterproofing concrete. I have a wide range of experience in the building of cisterns and I find that if I waterproof it on the inside it will leak from the outside and vice versa. Your pit may be treated as I treat my cisterns. Clean your pit thoroly. Put in a salamander filled with coke and leave the fire there until concrete is absolutely dry, then apply three coats of tar and three coats of building paper, alternately. Build a form inside 3 inches from old wall and fill with sloppy mortar. Mix 3 to 5. Cover the bottom $\frac{1}{2}$ times as thick as the walls. Your pit will not leak again.

C. E. GARDNER.

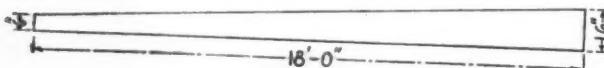
Problem in Mathematics

To the Editor:

Thompson, N. Dak.

Some time ago I saw a problem in one of the copies of the AMERICAN BUILDER but haven't seen the answer.

The problem was: A board is six inches wide on one end,



The Problem W. F. Hinz Wants to See Worked Out Is to Cut This Board Into Halves.

16 on the other and 18 feet long; cut it in two so each piece has the same number of square inches in it. Would like to see it worked out. Seems to me it's a problem in quadratic equations.

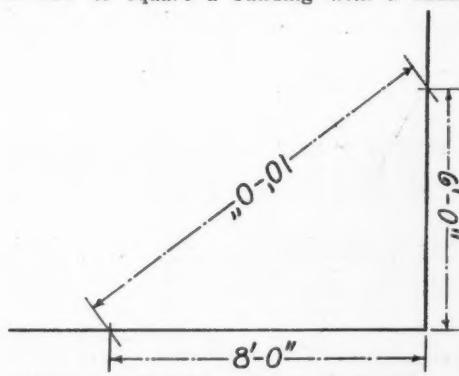
W. F. HINZ.

How to Square a Building With a Chalk Line

To the Editor:

Redmon, Ill.

The question has been asked in the AMERICAN BUILDER as to how to square a building with a chalk line. Six feet from the corner on one line and eight feet from the corner on the other will be square when it is just 10 feet across, as shown by the dotted line in the drawing.

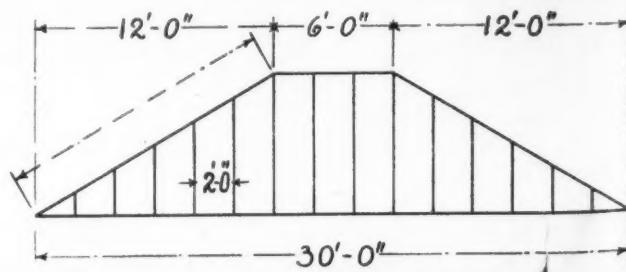


Squaring a Building with a Chalk Line.

To get plumb cuts of any rafter, take half the width of the

building, by the height of the comb above the plate. If the building is 30 feet wide and the height of the comb is 10 feet, half of the width will be 15 feet. Reduce the feet to inches. Use 15 inches on the long side of the square and 10 inches on the other for the comb mitre. Mark on the 10 side of the square and on the 15 side of the square for the plate cut. This will cut a third pitch roof.

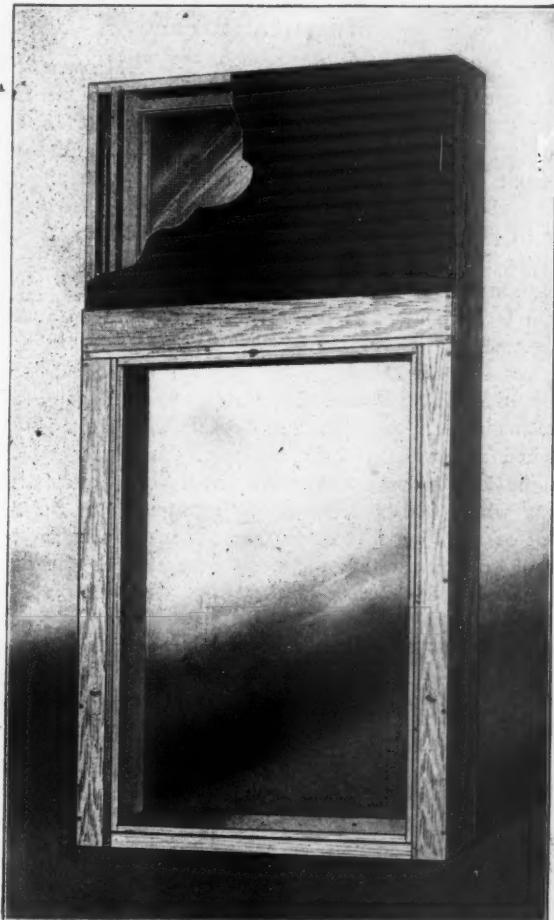
To get the space between jack rafters: If the building is 30 feet long and has a deck of six feet, there will be 24 feet to cut hips for, or 12 feet on each end of the building. If the rafters are two feet apart, there will be six spaces. Take the length of the hip rafters and divide by six. This will give the space between the rafters. If the hip should be



Showing How to Get the Space Between Jack Rafters.

Something New

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The frame forms a safe shipping package for all parts of the window in their respective places. The stiles, sill and boxhead are protected by scaling boards to be removed after setting the frame.

weather-striped, hardware attached, primed, ready for the trim after setting.

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Fits into the plans for any brick or frame building.

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After the frame is set the contractor applies proper inside and outside trim and finish; the window is ready for use.

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CINCINNATI

14 feet and there were six rafters, it would make the spaces 28 inches, as shown in the drawing. CLARENCE DAVIS.

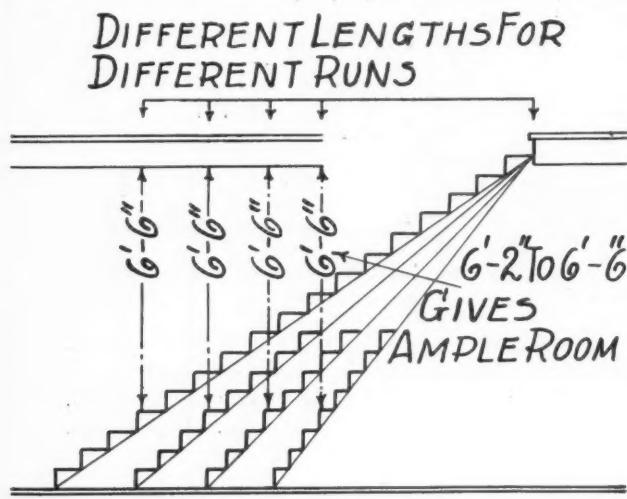


A Rule for Height of Stair Wells

To the Editor:

Perry, Iowa.

In answer to the inquiry about stair wells, I will say that I have never found two men who use the same rule. This



How Charles A. Paist Gets the Lead Room for Different Runs of Stairs.

rule, shown in the sketch, I have established for myself. The sketch shows the different runs of different stairs. The head room must be adjusted by the run used, as is shown. This is a very simple rule for any kind of a stairway.

CHARLES E. PAIST.



Asks Method of Applying Stucco to Metal Lath

To the Editor:

Lewiston, Idaho.

I am interested in the method of applying stucco to metal lath that has been nailed directly onto the studding. Will you send me the date and page of any information on this subject that has been printed in your magazine. If you know of any good book on this subject, I would be obliged to know the name of it.

IRA S. DOLE.

Answer—Beginning on page 74 of the June, 1919, issue of the AMERICAN BUILDER there is an article entitled "How to Build with Stucco Over Metal Lath and Expanded Metal." The Associated Metal Lath Manufacturers, of which Wharton Clay is secretary, issues a hand book on this subject that is authoritative. It can be secured by addressing the association office in the Conway Building, Chicago.—EDITOR.



Seeks Information About Cold Storage Closet

To the Editor:

Paterson, N. J.

Would like to know how to construct a cold storage closet in basement. As I understand it, it is a cellar built in the larger one.

P. MULLER.



Paint or Coating for Concrete Block Building

To the Editor:

Sparta, Ill.

I would like to know what is the best paint or coating for concrete block building to keep it dry. My machine makes

a block 6x8x20 inches and has 60,000 lb pressure to the block.

I have had a great number of inquiries about solid wall concrete dwelling houses with which I have had no experience. I have a two-story concrete block house that I built eight years ago, in which I live and I am well pleased with it.

D. J. MALONE.



A Successful Concrete Block Manufacturer

To the Editor:

Massena, N. Y.

Enclosed is a picture showing the operation of my concrete block machine with the block ejected ready to be carried away. The gravel pile is on one side with the mixing board in front of my machine, thus doing away with all unnecessary walking. Planks are placed on two-foot stools on the side of platform on which the work is done and the finished product is carried on the form and arranged on planks, by which means all danger of block falling apart in setting it down is eliminated, as the form can be held up against the body until it touches the plank. Another advantage is that it gives free air circulation up thru the block, thus affording an even drying process. By this method, in good weather, blocks made in the open can be removed from pallets and stacked at least five high the next day; after which they can be kept wet by means of an ordinary circular garden spray which can be left running any length of time, saving a lot of the time that other methods make necessary. I am thoroly convinced that the pressure system is the only way to make good concrete blocks.

EDWARD J. SMITH.



Edward J. Smith and the Concrete Block Machine That Has Been the Basis of His Business Success.



You Forward-Looking Contractors

A great building era is here—a new cycle in American home and farm building construction! The need—the demand—is for more efficient, more permanent buildings—for homes that afford more comfort—for farm buildings that afford greater protection to the valuable stock and high priced grains of the modern farmer. (Stop and think—farm products are worth more than ever before in history! Do you see the need of better protection?) The answer is tile.

DENISON HOLLOW TILE

Of all building materials, it is the most efficient, most substantial, most permanent. It affords the greatest protection against fire, rats, cold, heat, dampness and storms.

Yet it costs no more than other substantial building materials—25% less than solid brick construction. Besides, its upkeep cost is lower—requires no painting or repairs.

For homes, it has the added advantage of attractive and distinctive appearance. From every standpoint—tile wins!

Denison is the better building tile for two reasons—finer quality and patented features.

It has a non-continuous, moisture-proof mortar joint.

The bearing webs are in vertical alignment, giving strength where strength is required—no weight where strength is not required.

Each tile is a complete unit in itself, stands on its own base either side up; it cannot be wrongly placed or plastered.

Five, ten, twenty or fifty years from now—will you or your children be able to point with pride to the buildings you put up today? Are your buildings your best salesmen? Investigate Denison Hollow Tile! Write for prices and full information. Construction details free.

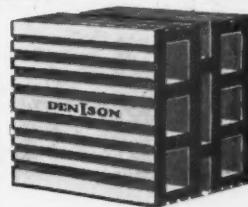
Sold by the best lumber dealers everywhere.

Mason City Brick & Tile Co.

900 Eighth Street
Mason City, Ia.

Largest Manufacturers of
Clay Products in the
World

The buildings shown here are all constructed of Denison Hollow Building Tile. This illustration is a grouping from the actual photographs of the buildings.



**Denison Load Bearing
Tile No. 47**

Easily laid—builds up rapidly. Each tile is four brick courses high, double wall. Non-continuous mortar joint insures absolute dryness on inside walls. Each tile a complete unit—stands on its own base, either side up. Corner, jamb and fractional tile supplied at same basic price.

How to Make the Cut and Get the Pitch of a Gambrel Roof

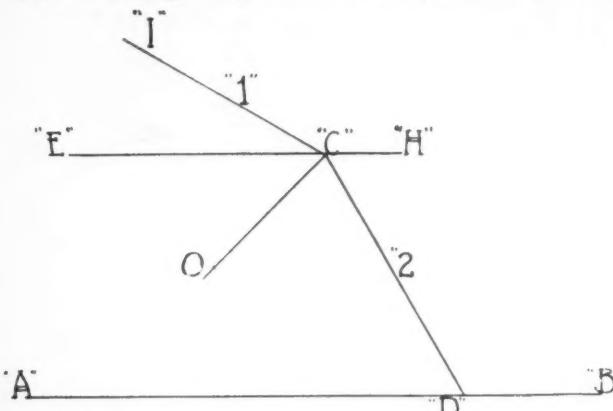
As Explained by Two Northwestern Builders

To the Editor:

In the July number of the AMERICAN BUILDER "A Subscriber" asks how to make the cut at intersection of rafters of a gambrel roof of any pitch.

There are a number of ways of obtaining this cut, but I think the most practical way is to draw the angle decided on, then bisect it with the dividers and apply the steel square to get the figures for the cut.

Draw AB long enough to use the square on, make DC



Showing How to Use the Steel Square in Making Cuts and Setting the Pitch of Gambrel Roofs.

equal pitch of lower rafter, draw EH parallel to AB for a base line from which to lay out the pitch of upper rafters. Make CI equal pitch of the upper rafters; with the dividers take any convenient radius and with C as center describe arcs cutting DC and CI at 1 and 2, then with any radius greater than previously used and with 1 and 2 as centers describe arcs intersecting at O, draw OC which is the line of intersection of the rafters; apply square with the tongue lying evenly along the line of intersection, this will give the figures for the cut.

It is better to take 24 inches on the blade as the distance on the tongue is too small to use with accuracy when 12 inches is taken on blade.

Just a few words (if I may be permitted the space) about gambrel roofs in general.

There seems to be no definite rule governing the pitch or proportionate length of rafters for these roofs, as there are almost as many types as there are builders and they all answer the purpose.

The question then resolves itself into choosing a roof so proportioned as to be most symmetrical to the eye and at the same time have the requirements of strength and room.

In the March number Mr. Westholme gives three types showing different pitches but all within the limits of a semi-circle.

Personally I prefer a roof similar to the one that has been discussed in several issues and is shown in the February, 1918, number, page 71. In this one the ridge is higher than a semi-circle. This additional height is obtained by making the lower rafters longer than in some styles. The pitch of the lower rafters is evidently 60 degrees, which is hard to improve on for a barn; the next thing is to determine the run of same, which is equal the span multiplied by .225 which is just half way between $1/5$ and $1/4$ the width.

Thus for 36 feet span, $.225 \times 36 = 8.1$ feet or 8 feet 1.2 inches. It may be useful to know that the length of a rafter (from plate) 60 degrees pitch ($6 \frac{15}{16}$ inch run to 12 inches rise) is exactly twice the run.

If the upper rafter is 30 degrees (12 inch run and $6 \frac{15}{16}$ inches rise) the length is twice the rise.

In the June number of the AMERICAN BUILDER Mr. Reichard gives what he describes as exact rule for finding the quantity of matched flooring required for a given area.

This rule would be very convenient if it was correct. By his method it would take $1,166\frac{2}{3}$ feet to lay 1,000 feet area 3 inch flooring ($2\frac{1}{2}$ inch face) whereas it actually takes 1,200 feet.

In the Western States and Canada $\frac{3}{4}$ inch is dressed off in matching. It is therefore necessary to have a rule that is not only correct but is applicable for varying ways of milling.

It is simply a question of percentage and it must be determined what percent the quantity lost in matching (say $\frac{3}{4}$ inch) is of the amount left (say $3\frac{1}{4}$ inches) not of the original width (4 inches) and is found by dividing $\frac{3}{4}$ inch by $3\frac{1}{4}$ inches expressed decimals. Thus:

$.75 \div 3.25 = .2307$ or practically 23 percent as the division does not need to be carried out more than two figures for sufficient accuracy.

Multiply the given area by 23 per cent which gives the quantity required more than area.

Example:

Let 860 feet equal area to be covered; then $860 \times .23 = 197.80$ (say 198). 860 plus 198 equals 1,058. 1,058 feet total amount required.

PERCY TAYLOR.

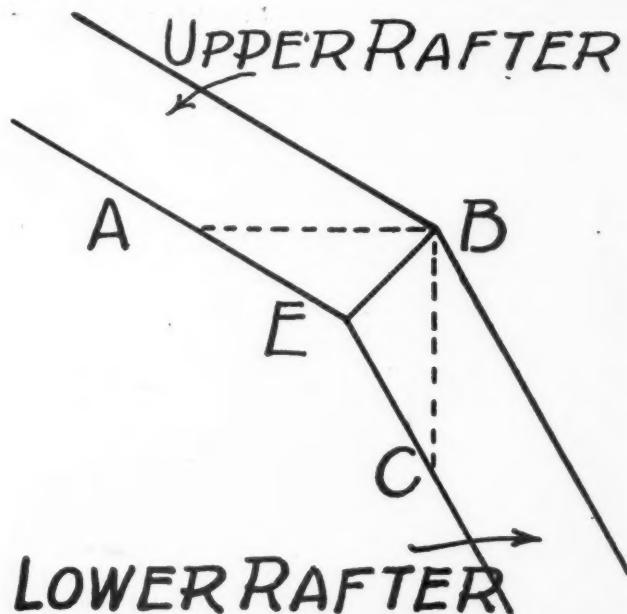
Another Way of Getting Rafter Cut

To the Editor:

Pennock, Minn.

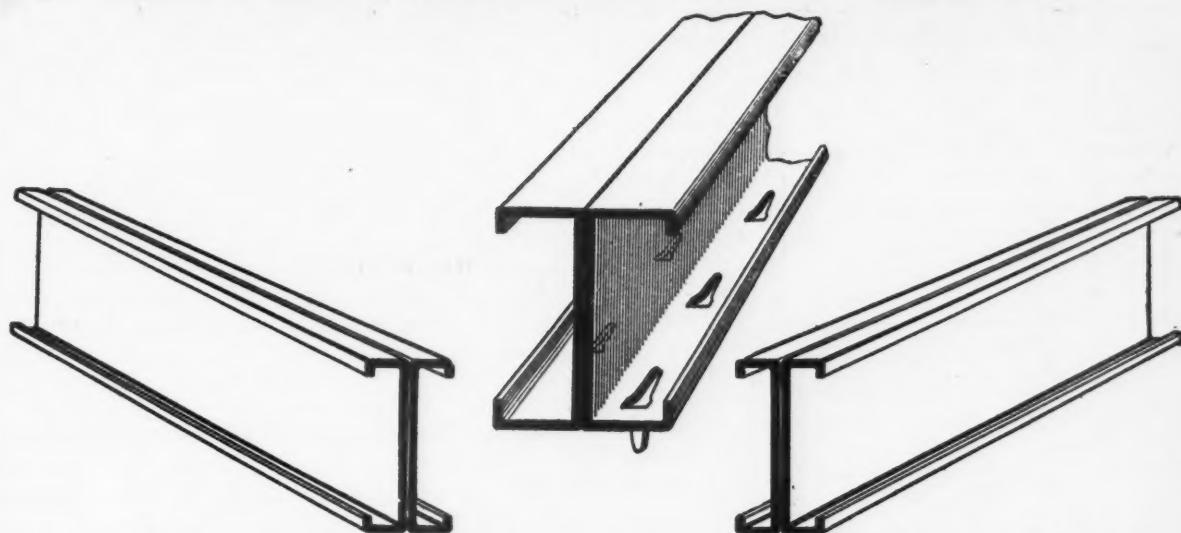
Am submitting the following solution to the problem of "A Subscriber" in the July issue regarding miter cuts for a gambrel rafter. Referring to the accompanying sketch, the line AB is drawn as for a seat cut on the upper rafter. Lay the square on this line so that the line strikes the same figure on tongue and blade, the blade laying off an angle of 45 degrees with the line. Cut on the blade, EB. For the lower rafter draw the line BC as for a plumb cut and proceed in the same way. Angles A B E and E B C are both 45 degree angles.

A. LUMBERMAN.



Another Method of Using the Steel Square in Getting Rafter Cuts.

GF STEEL LUMBER

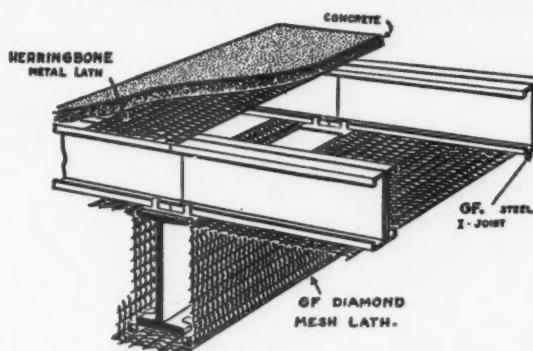


We have uncommon satisfaction in announcing, through this advertisement, a new GF product for better building construction—GF Steel Lumber.

GF Steel Lumber should enlist your particular interest as it does ours, because it typifies a form of construction which will tend to reduce the present enormous fire losses, by bringing the cost of fireproof construction within the means of the average individual.

It takes the place of wood joists and studs in floor and partition construction, and with Herringbone Metal Lath which is used with it, a type of construction is offered which eliminates combustible material.

The result is a light-weight, fireproof, indestructible building which costs but little more than wood construction. GF Steel Lumber construction means light floors, with the resulting reduction of deadload on beams, columns, walls and foundations. It is soundproof. It gives unusual finish to a building; plaster is mechanically



bonded to the Herringbone Metal Lath and becomes a permanent part of the building. It provides a safe and dependable means of economical construction during winter months.

Estimates on GF Steel Lumber for any type of building can be obtained promptly through GF Branches, Agents, and Dealers everywhere, or direct from our Engineering Service Department at the Factory.

Write for the GF Steel Lumber Catalogue

THE GENERAL FIREPROOFING CO.



METAL LATH-CONCRETE REINFORCEMENT
WATERPROOFINGS AND TECHNICAL PAINTS
YOUNGSTOWN, OHIO.

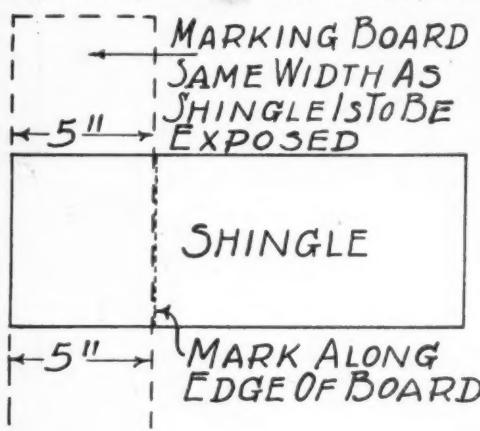


NEW YORK - CHICAGO - PHILADELPHIA - UTICA - BUFFALO -
KANSAS-CITY - OMAHA - DALLAS - MINNEAPOLIS - SAN FRANCISCO

How to Save Time Shingling

To the Editor:

I wish to suggest a scheme which came to my attention. Old numbers of the AMERICAN BUILDER are valuable to me and, likewise, are to the other members of the trade, also.



Easy Method of Marking Shingle for Courses at East End.

be of benefit. Instead of measuring with a rule each course, select a shingle the width you wish to lay the others to the weather. If five inches, mark it five inches; if five and one-half inches, mark it that distance on both sides so that it can readily be seen. Next lay the gauge horizontally across the butt of the shingles, as in sketch, and mark along its length. Repeat as often as you have courses to the ridge of the roof. For instance, if there are to be 20 courses from the eave to the comb, mark 20 shingles for each end and they are ready to use. This saves the time of searching for a rule and pencil; also if two men are working they will come out more even at the comb.

OWEN McCAFFERY.

**Wants Mission Furniture Design**

To the Editor:

Kensett, Iowa.

Please give me some more mission furniture designs for winter work, as I have plenty of orders. D. L. YOHO.

**Frames an Unusual Gambrel Roof Barn**

To the Editor:

Northville, S. D.

Please find enclosed \$2 for another year's subscription to your valuable magazine. I could not get along without it. Also enclosed find some pictures of a barn I built recently on a farm near Athol, S. D. The framing picture shows myself and crew at work. I see some of the other boys are sending



R. E. Vance and His Crew at Work on Gambrel Roof Barn.

Urbana, Ohio.

in photos, so I thought I would send some. R. E. VANCE.

**Anyone Remember This Lath Holder?**

To the Editor:

Glassport, Pa.

From your invitation giving me the freedom of your help department, I now feel at liberty to do so.

For inquiry I have in mind a wood lath holding machine, light, handy and easy to operate. Holding nine or ten lath at one time, it was easy to clamp and hold this quantity of lath to the ceiling while the loose ends were being nailed. To release was easy and simple. As there is a good work here for such a rig, I would like to have the name and address of the manufacturers or of the man who made known his patent to Washington, D. C., in the first year of President Roosevelt's administration.

If you are able to give me the whereabouts of this kind of machine or the plans to construct one, I will appreciate your service.

J. MACD. MURRAY.

**Credits Success to Radford Publications**

To the Editor:

Avon, N. Y.

Since I received your Cyclopedias, American Carpenter and Builder and other books, I have increased my earning capacity by the year over 300 per cent, and now I am very busy 365 days in the year and do not have time to read and study the American Builder as I would like to, but still do not wish to do without it.

L. L. BEEMAN.

**Wants to Know How to Build Water-proof Concrete Pit Floor**

To the Editor:

Greensboro, Md.

I am hunting information. I built a flour mill this year. The cellar is 5 feet deep and the elevator pit is 4 feet below cellar floor, and since I put the elevator in the springs have raised and water stands in pit. I have concrete walls but have no floor in it. Will you kindly tell me how to put floor in that will keep the water out.

C. H. PIPPIN.

**Wants House Designs Suitable for Florida Climate**

To the Editor:

Tampa, Fla.

I have enjoyed the AMERICAN BUILDER very much, but I live in Florida and the houses you have in your magazine are for the North. The house that will do in the North is not the house with the greatest success in the South.

Down here we have different weather conditions, different climate conditions, and a different class of people from what they have in the North.



The Unusual Barn Erected by R. E. Vance, Near Athol, N. Dak.

KNICKERBOCKER

MIXER POINTS
THAT
BRING REORDERS

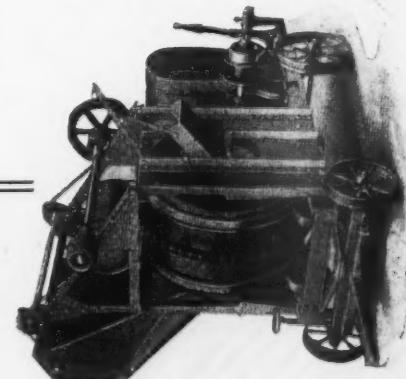
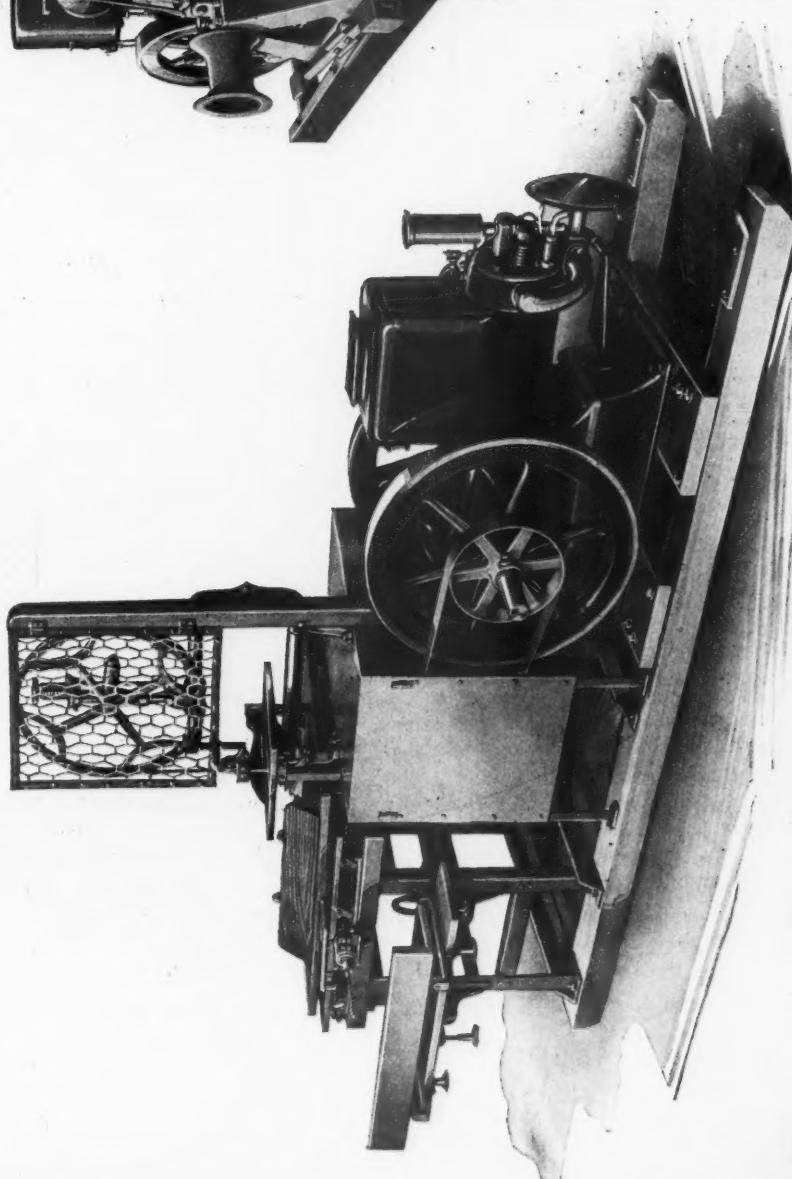
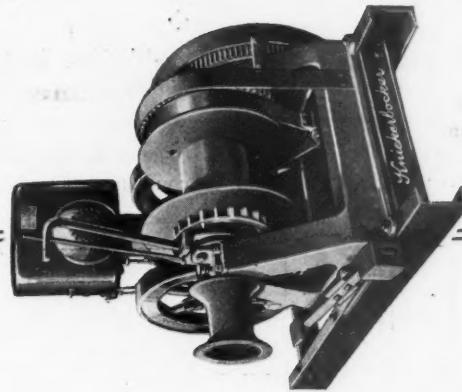
FAST LOADING
WIDE LOADER

LARGE
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FAST
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NO SLOPPING

SURPLUS POWER

COMPACT AND
STURDY



OUR 1919
CATALOG SHOWS
OUR CONCRETE
MIXERS
IN TWENTY
STYLES AND SIZES

MORTAR MIXERS

PORTABLE
WOODWORKERS

COMBINATION
SWING CUT OFF &
RIPPING MACHINES

SINGLE & DOUBLE
DRUM REVERSIBLE
& NON-REVERSIBLE
HOISTS
POWER PUMPS

THE KNICKERBOCKER COMPANY
525 LIBERTY STREET
JACKSON, MICHIGAN

QUALITY COUNTS

In Florida there will be one of the greatest building booms that has been heard of in a long time. The Northern people are coming down for the winters and a lot of them are staying in Florida and are making their homes here. The trip to California is a long one. The winters in the North are long and cold. Those in Florida are short and mild. All of the best and most favorable conditions point to Florida.

So, if you have made any study of Florida, and will devote some space in your magazine to Florida, I am sure that it will help your subscription department, also let more people know of the advantages we have here in Florida waiting for them.

ANDREW G. WEAVER.



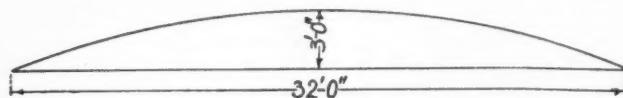
One for the Mathematicians

To the Editor:

Lethbridge, Alta., Can.

Being a subscriber to your valuable paper, I wish to take advantage of your Correspondence columns to ask a question that has me stumped. It is as follows:

Being given a segment of a circle, the chord of which is



How Is the Radius of This Arch Determined?

32 feet and the sine three feet, find the radius mathematically. I can do it in practice mechanically. The geometrical formula of three points in a circle will find the center; or again by intersection of lines, but what I want is to be able to figure it out mathematically. I am very much pleased with your paper and especially in the correspondence columns.

Here is a sketch of above question.

MORRIS J. COLE.

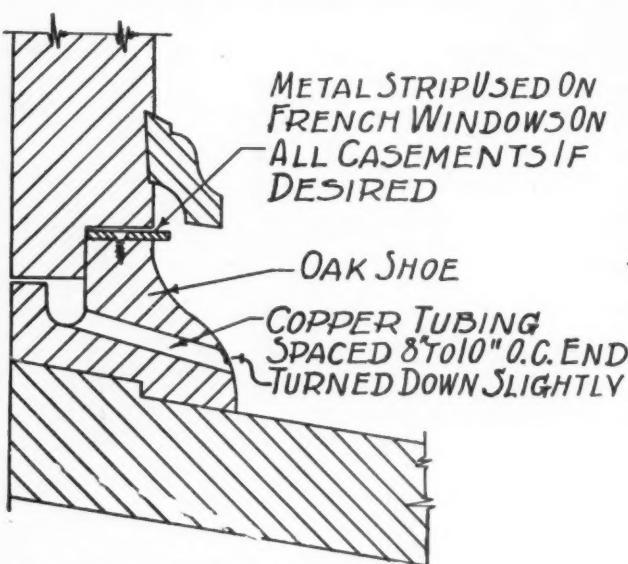


Mould to Make Casement Windows Tight

To the Editor:

South Beach, Conn.

In reply to a correspondent in the August issue of the AMERICAN BUILDER, who asks for a suitable mould to be placed at the bottom of a casement window swinging in, I am enclosing a sketch of one that we have worked out after spending some time and money. This will meet all requirements. We have used this method about five years and have found it without a fault. If there is trouble about the



Detail of Leak-Proof Casement Window Swinging In.

side jambs, I would be glad to send details. We have used these on houses facing Long Island Sound and the ocean, and they have proven weather tight. It may be a little expensive, but time will prove that it is best.

W. J. PREVOOST.

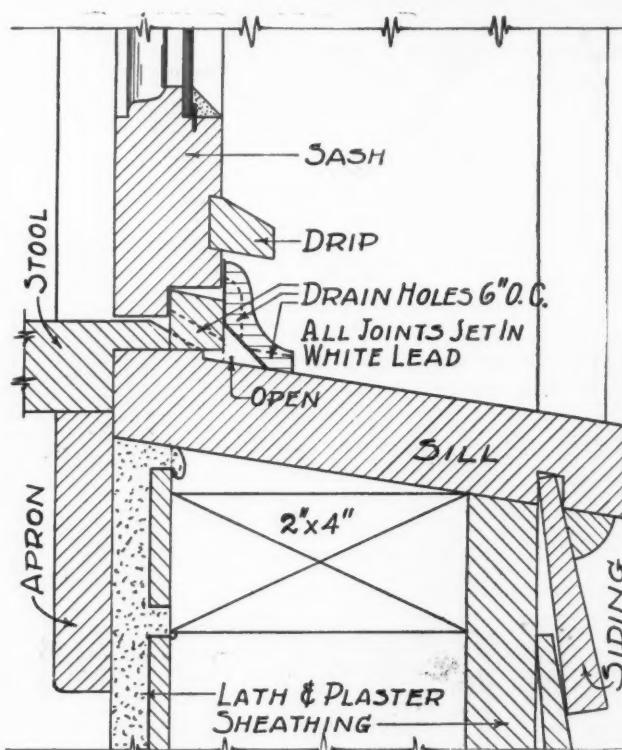


Design for Weather-Tight Inswingng Casement Window

To the Editor:

Carnegie, Pa.

I am sending a sketch for an inswingng casement window. I have used this method of construction and know it to be



Detail of Leak-Proof Casement Window Springing In.

O. K. Any strips found around the building can be used. I would like to have your architect make a drawing of this, as you will see there is a water table fastened to the sash. A strip is fastened to the sill and there also is a perforated strip on the sill. I am a charter member of the AMERICAN BUILDER.

D. H. McWILLIAMS.



How to Keep Plaster From Cracking in Corners

To the Editor:

Wishek, No. Dak.

In the August issue of the AMERICAN BUILDER one of the brothers asks how to stop plaster from cracking in the corners. Here is a very simple method that also saves studding. Take metal lath which comes in sheets 18 inches by eight or nine feet in length, and split into strips three or four inches wide with tinsmith's shears. Then bend at right angles taking it into the corners over the lath. The plaster goes thru the metal and clinches around the lath, making a reinforced corner. One can put down the base, or put up the picture moulding much faster, because there is no danger of cracking from pounding or crowding.

CHARLES PRATT

NOW is the time to write for catalogs and handbooks, samples, etc. Keep posted on the new things as they are announced.

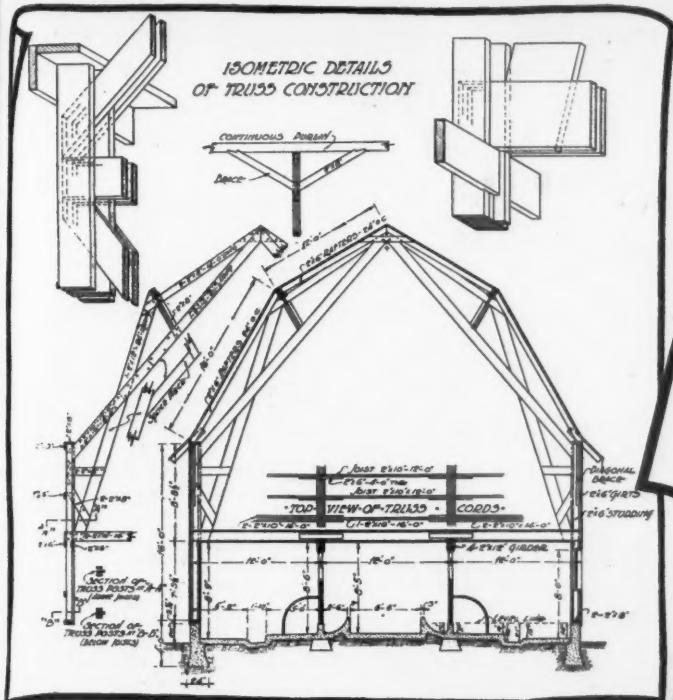
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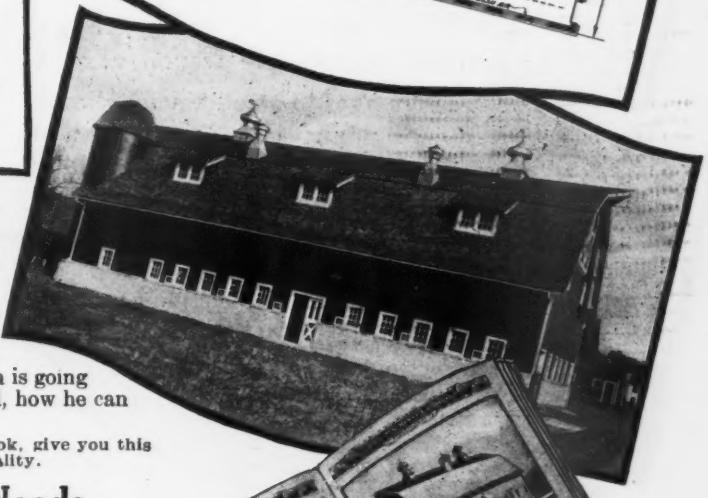
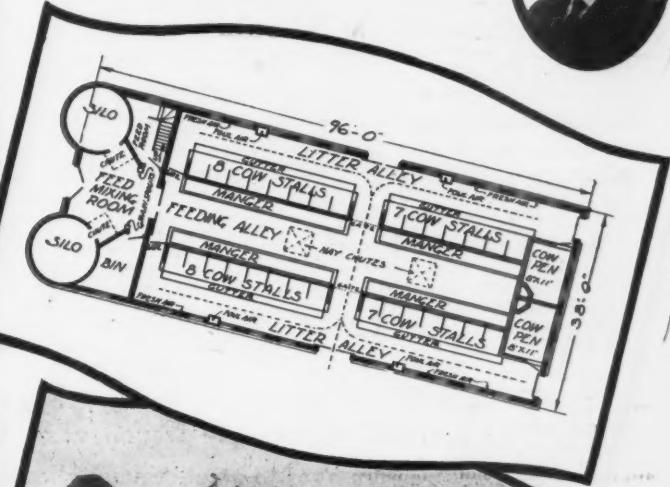
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Barn Building
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Over 50 Years Barn Planning Experience Offered Carpenters and Builders Without Charge

Undoubtedly the strongest influence in your favor when talking to a prospective barn builder is to show him just how his barn is going to look when completed, how conveniently it will be arranged, how he can save space, material, money and trouble in building.

Plans Worked Out to Meet the Needs of Your Customers

with practical suggestions by our experts based on many years specialization in barn planning. We make no charge for blue prints in which your ideas and suggestions are carefully worked out. We supply complete working plans, with material specifications, etc., at actual cost of production.

Get Your Copy of the New Louden Barn Plan Book

Third edition just off the press ready for distribution. Not a catalog. Greatest barn building guide ever written—112 pages, with barn building illustrations on every page. Shows 74 barns and other farm buildings, besides numerous floor plans and general construction details. Chapters on foundation, wall and roof construction, drainage, ventilation, concrete work—covers every phase of barn building. Sent post paid, no charge, on receipt of one or more names of prospective barn builders in your locality. Write for it today.

Suggest Louden Barn Equipment— It Saves Half the Barn Work

It is a necessary part of the profitable barn. Every farmer knows about it and it is used in over a million barns. The Louden Catalog tells all about Louden Steel Stalls and Stanchions, Litter and Feed Carriers, Water Bowls, Animal Pens, Barn and Garage Door Hangers, Hay Unloading Tools, Power Hoists, Ventilators, Cupolas—"Everything for the Barn". Sent post paid—no charge—no obligation.

Fill out and mail us the coupon and we will be pleased to co-operate with you in securing the barn building business in your locality.

THE LOUDEN MACHINERY COMPANY

MACHINE
(Established 1867)

5530 Court Street, FAIRFIELD, IOWA

BRANCHES:
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The Louden Machinery Co.

Please send me full information on your Barn Building Service to Carpenters, also books checked below.

- Louden Barn Plans
 Louden Catalog

Prospective bulldogs are:

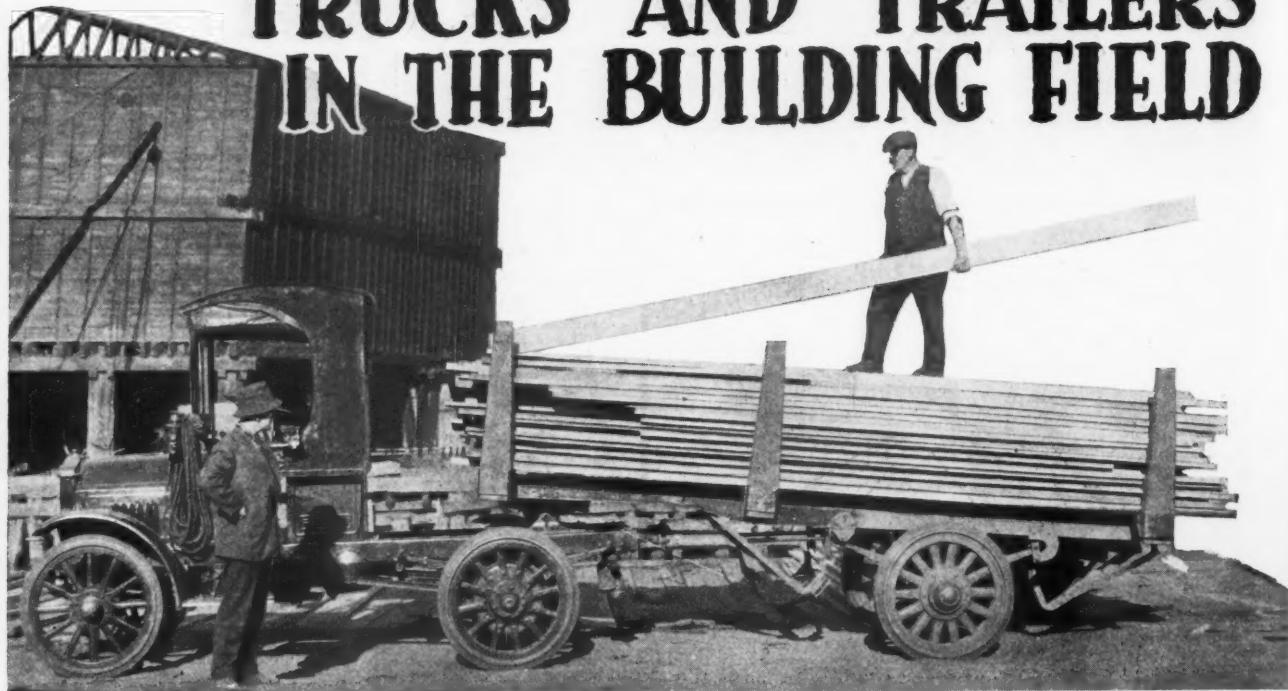
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My Name.....

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TRUCKS AND TRAILERS IN THE BUILDING FIELD



Semi-Trailer Useful for Hauling Brick

WORK DONE IN FOUR HOURS THAT WOULD TAKE A TEAM A DAY AND A HALF—NO LOSS FROM CHIPPING

OME of the advantages to be obtained by brick manufacturers, building materials dealers and contractors from the use of trailers for hauling were shown in Chicago recently by a demonstration made for the Hydraulic Press Brick Co. with motor truck and semi-trailer.

When this outfit called at the company's west yard at 1 p. m. 1,000 brick had been loaded on a horse-drawn wagon to be hauled to Rogers Park, slightly more than 15 miles. The team was expected to make this trip and return to another of the company's yards some time that evening. The follow-

ing morning it was to have been loaded with 800 brick and return to the west yard about noon, where 550 additional brick were to be loaded for delivery. These jobs meant one and one-half days' work for the team.

Instead, the load of 1,000 brick was transferred in half an hour to the trailer and unloaded in Rogers Park by 2:40 p. m., and the truck and trailer arrived at the north yard at 3:10. Here 800 brick and 100 pounds of mortar color were taken on, and the outfit reached the west yard at 4:13. There 500 addi-

(Continued to page 124.)



The "Reo" Tractor and "Martin Rocking Fifth Wheel" Trailer That Gave Such a Good Account of Themselves in Hauling Brick for the Hydraulic Press Brick Co., Chicago.



JUST FACTS—THAT'S ALL

**The Experience of Winther Users in the
Building Industry is a Record Open to No Argument**

Winther Motor Trucks (Rear Drive) are built in seven sizes $1\frac{1}{2}$ to 7 Tons Capacity. Winther-Marwin Trucks (4-Wheel Drive) are built in four sizes, $\frac{3}{4}$ -1 Ton; $1\frac{1}{2}$ Ton; $2\frac{1}{2}$ Ton; $3\frac{1}{2}$ Ton Capacity.



WE ask just this—that you shall base your judgment of Winther (Rear Drive) and Winther-Marwin (4-Wheel Drive) Motor Trucks, upon no claim of ours but upon the experience of those who own Winther built trucks.

It is a fact that Winther Internal Gear Motor Trucks are today the choice of the Building and Contracting Industry throughout this country. It is a fact that from the day of their introduction Winther Trucks took their place among the foremost heavy duty produced in this country—the passing years have but served to confirm that position.

It is easy to understand why when you read such letters as this:

"With reference to our Winther Truck, which we have now driven over nine thousand miles, the writer asked the driver if he ever had any trouble as I have never had any complaint and have not seen any repair bills on it."

"The driver states all he has ever done to it was to grease it and one time clean the spark plugs. We have used this truck for hauling from West Point, Ky., which is 25 miles from Louisville and have not lost 5 minutes time making two and sometimes three loads a day."

"If there is any other truck which can do any more than this one has, we would be glad to see it."

(Name on request)

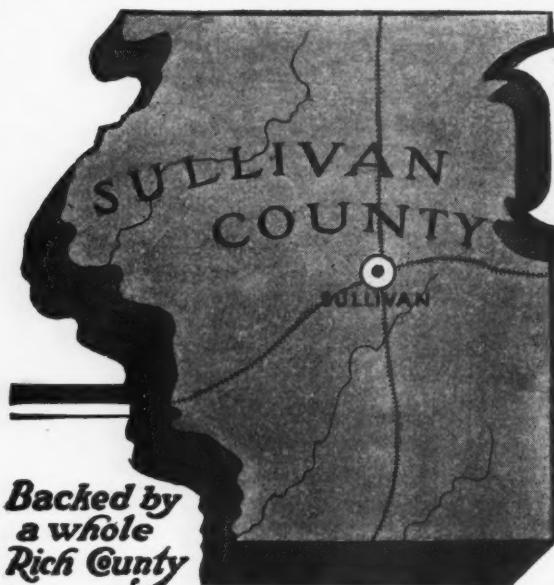
In every hauling problem a builder or contractor faces, the chances are that Winther equipment will make him money. We will be glad to place the full information before you. Winther Motor Trucks are supplied in $1\frac{1}{2}$ to 7 tons capacity. Straight drive tractors are also available in $1\frac{1}{2}$ to 7 tons capacity and Winther-Marwin (4-Wheel Drive) in four sizes $\frac{3}{4}$ -1 ton; $1\frac{1}{2}$ ton; $2\frac{1}{2}$ ton and $3\frac{1}{2}$ tons capacity. If there is not a Winther listed to meet your conditions, we will build it.

Winther Motor Truck Company

Department 43

Kenosha, Wis.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



**Backed by
a whole
Rich County**

MUTUAL "America's Greatest Truck"

An "All Star" Truck

Like an "All-Star" theatrical performance, the MUTUAL TRUCK is an aggregation of units that have won a place and a name for themselves at the very top of the profession.

In making our selection of the units for the MUTUAL we closed our ears to the noise of mere popular advertising; and, by careful comparison, measurement and test, of the rival makes' engines, clutches, transmissions, universals, frames, axles, radiators, steering gears, magnetos, carburetors, wheels and all other parts, chose the ones that the great majority of the best authorities on the "inside" agreed with us were the only ones that could be used for a truck that would dare call itself—"America's Greatest Truck."

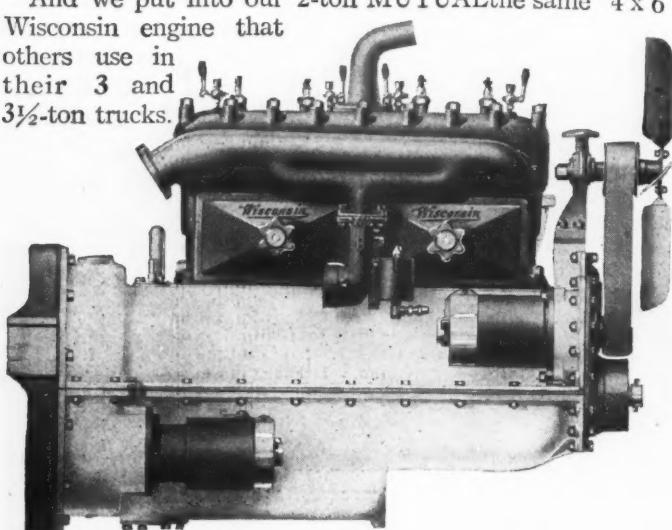
MUTUAL SUPER SPECIFICATIONS (TWO TON)

America's Greatest Truck Engine

From every standpoint—design, material, construction, extreme care in manufacture and inspection, the Wisconsin Engine is recognized as indisputably America's Greatest Truck Engine.

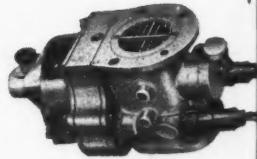
There are several very good "second best" truck engines on the market, any one of which is good enough for an ordinary truck; but there is only one engine that is good enough for "America's Greatest Truck"—and that engine is the "Wisconsin"—first in gas economy, endurance, reliability and all-round engine efficiency.

And we put into our 2-ton MUTUAL the same 4 x 6 Wisconsin engine that others use in their 3 and 3½-ton trucks.



America's Greatest Truck Governor

The Duplex Company's Duplex (not Simplex) is the only one that controls road-speed independent of motor-speed. It makes the driver obey the owner's orders always and everywhere; it is, in fact, an "automatic chauffeur," that adds years of life to the machine by guarding it against abuse. It is vastly more accurate than throttle control; makes a 20% increase in gasoline efficiency by use of a patented "grid" valve instead of the butterfly type. It proportions fuel to suit road conditions, delivers power as needed, and assures a quick get-away. The Duplex delivers more power on hills and bad roads; increases average road speed 30% and acts as an automatic safety brake on steep downgrades. Incidentally it costs us 2 to 5 times as much as other makes and types.



America's Greatest Truck Clutch

The Hele-Shaw, Universal No. 5, oil-immersed, multiple-disc clutch costs us twice as much as the next best and from three to four times as much as clutches used on the majority of trucks. It gives a smooth, silent positive pick-up; a firm final grip; and saves the engine and entire mechanism (including tires) the ruinous "racking" that cheap clutches cause. You will tolerate no other clutch on any truck you own after you use the Hele-Shaw.



MUTUAL

"Greatest Truck"

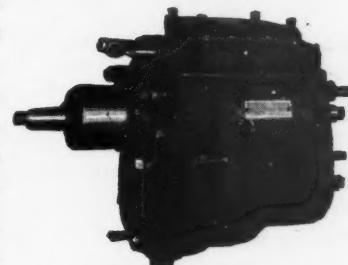
2-3½-TON

America's Greatest Truck Universal

Could it be anything but a Spicer? And we use three bearing joints in the shaft and a fourth in the universal joint itself. Here, too, we put into our 2-ton Mutual the size used for 3 and 3½-ton trucks by all other makers who use the Spicer.

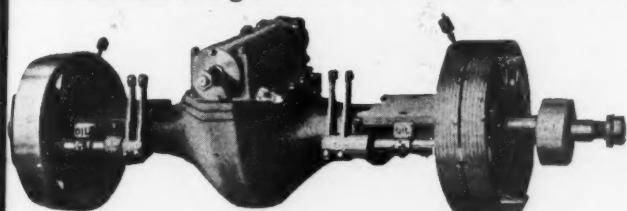
America's Greatest Truck Transmission

"Fuller" of course; and possibly model "G5" selective; with removable plates, to permit attachment of mechanical hoist and tire pump. Four speeds forward and reverse. A simple sturdy, dependable gear-set made by leading high-priced truck makers on their 3 and 4-ton models.



America's Greatest Truck Axles (Ball Bearing)

To insure the highest efficiency, we adopted the Sheldon Worm Gear Axle—first because both the worm thrust and radial loads are taken by ball bearings, which offer less friction than any other type of bearing. Second—because it is of the semi-floating type, which has the advantages of greater simplicity, less weight, greater carrying capacity, greater resistance to side shocks, lower maintenance cost and greater ease of removing wheels for



inspection. The more deeply versed in scientific automotive engineering a man is, the more emphatic will be his declaration that the Sheldon is America's Greatest Truck Axle.

Sheldon Ball bearing steering knuckle type of Front axle was adopted as a matter of course.

And These, Too, Are Greatest:

Parish and Bingham pressed steel Frame; extra heavy type. Length 224 inches.

Mather Chrome Vanadium Springs.

Smith Metal Wheels for solid tires—regular equipment and not a costly extra.

Dayton Steel Wheels for pneumatic tires.

Goodyear or Firestone Tires; 36 x 4 solid for front wheels and 36 x 8 for rear; or same makes of Pneumatic tires as an option, at an extra cost.

Ross Steering Gear—with 20 inch wheel (not 17-18 inch).

Perfex Radiator, worth a big story in itself.

Bosch Magneto—type ZR4 with impulse-starter. Dust proof and water proof.

Stromberg Carburetor; type M.

Bound Brook Oilless Bushings: throughout.

Weather-tite Cab—fit for a King; regular equipment.

Powell Muffler—12 sections. Remarkably silent.

Electric Steel Castings at vital points, where others use Malleables.

25-Gallon Gasoline Tank

Special 2½-gallon Reserve Lubricating Oil Tank.

Wheel base—150 inch.

Specifications on the Mutual 3½-ton and 5-ton are equally "Great."

Buy One "Mutual"

Don't quibble about the price; but take our word for it—on this one purchase—that we give more for the money, in actual cost to us, than you can get in any other truck.

Put your "MUTUAL" into the hardest service you have, and keep a record of its ton-mile performance—all costs counted.

Do this, and all your future purchases will be MUTUALS.

We rise or fall on this test; and remember, we have vastly more at stake than you.

MUTUAL TRUCK COMPANY, SULLIVAN, INDIANA, U. S. A.

Motor Trucks and Trailers

(Continued from page 120.)

tional brick were put on, making a total load of 8,540 pounds. The deliveries were completed by 5:10, the truck and trailer then returning to the yard, having completed in about four hours the deliveries that would have taken the team a day and a half. The total mileage was 36 and the fuel consumption four and one-quarter gallons of gasoline.

On smooth pavement beyond the city limits a speed of 30 miles an hour was attained with the load of more than three tons, including weight of trailer. No chipping of brick resulted, owing to the easy action of the truck and trailer springs.

A similar demonstration was made a few days later. From 10:22 a. m. to 4:02 p. m. 2,650 brick were hauled and 56.6 miles were covered with a fuel consumption of five and one-half gallons.

Makes Speed with Heavy Load

The following day a load of 1,000 brick was hauled eight miles in 50 minutes and 1,250 enameled brick 12 miles in 45 minutes. The latter trip was thru slow-moving traffic. There was no chipping of the fragile enameled brick, altho a similar trip with the unsprung horse-drawn wagon showed 22 per cent loss from chipping.

Later the semi-trailer ran 32 miles, took on 1,530 brick weighing 9,562 pounds from a freight car and hauled them four miles in the forenoon. In the afternoon it hauled 6,780 brick a distance that would have required a team a whole day to haul 2,000, and returned 32 miles to the yard at 7:30 p. m. Mileage for the day was 102 and gasoline consumption 10

gallons. There are some heavy hills on one four-mile stretch, but the trips were made in approximately 15 minutes.

The demonstration with the single trailer was sufficient to show remarkable efficiency, but if the more economical method of employing three trailers with the truck had been followed, the whole carload of 16,000 brick could have been moved in the afternoon. By this method the loading and unloading time would have been saved to the truck. While the truck was in transit with one trailer, another would be loading at the car and the third unloading at the other end of the route.



Hauling Heavy Builders' Supplies with Trucks

CONCRETE blocks, hollow clay building tile, cement and sand, and other materials of this sort are heavy and difficult to transport, unless the material dealers' haulage equipment is suited for heavy work. A few hundred concrete blocks, tile or brick make a large load in tonnage, and the trucks to haul them must be so constructed as to stand up under the strain.

The Boulevard Cement Block Co. employs a sturdy truck to transport its products to the building sites and to the material dealers. While the load on the truck shown in the accompanying illustration is not large in bulk, every material dealer knows how heavy it is and that the truck must be strongly built to carry such a load at the speed a motor truck is capable of making, and over the rough roads and pavements.



The Heavy-Duty Truck Provides the Most Economical Vehicle for Hauling Heavy Building Materials. The C. P. Steinheiser Co., Detroit, Mich., Uses a Staunch "Packard" for Hauling Tile, Cement, Etc.

Consider 3 Points before buying a truck

1 Low First Cost

This is the buyer's advantage, made possible by greater production. Republic is the largest manufacturer of trucks exclusively, building a complete line. There are almost 60,000 Republics now in use.

2 Low Operating Cost

The Torbensen Internal Gear Drive, used in all Republic Trucks, delivers to the driving wheels over 92% of the power generated by the motor. No other drive delivers as much. Hence, Republic users obtain greater mileage and greater economy in fuel and lubricant used.

3 Low Repair Cost

Maintenance of over 1400 fully equipped Republic service stations, in nation-wide distribution, operated by Republic-trained mechanics, assures Republic users uniform and dependable service facilities with a minimum loss in the truck's operation.

*Consideration of these three points makes
Republic the logical truck to buy*

REPUBLIC MOTOR TRUCK CO., Inc., Alma, Michigan



REPUBLIC
TRUCKS

THE "YELLOW CHASSIS" TRUCKS



The Boulevard Cement Block Co. Has a Special Body on Its "Acme" Truck for Hauling the Concrete Blocks It Makes.

The other illustration shows the haulage equipment of the C. P. Steinheiser Co., dealer in builders' supplies, at Detroit, Mich. Tile, sewer pipe, cement and other materials are loaded into this flat-bedded, stake-body truck, which is capable of carrying five tons.

These two illustrations give an excellent idea of the efficiency of motor trucks for building material dealers. Because of their ability to carry heavy loads, their speed in reaching their destination, which makes it possible to make several trips a day, and the fact that one truck will replace several

teams, thus economizing in drivers, motor trucks make economical and efficient haulage equipment for the members of the building industry.

+

Light Trailers for Lumber Dealers

LIIGHT trailers, the kind that do not cost much money and can be attached to either a small truck or a passenger automobile, are vehicles that meet the haulage needs of a large percentage of retail lumber dealers. Trailers of capacities up to one ton provide the dealer with a means of transporting good-sized loads of lumber and other building materials at small cost, and will replace two teams and wagons.

Illustrated herewith are a small truck and a trailer that are used by the Dickelman Manufacturing & Lumber Co., Forest, Ohio. The photograph of the outfit was taken in front of the company's yard, and shows not only the haulage equipment, but the yard buildings, which are exceptionally good. However, of the truck and trailer, Mr. Dickelman says:

"We have been using this trailer for more than a year, hauling as much as 1,500 feet of yellow pine over heavy grades. The truck and trailer take the place of two horses and wagons and we have the automobile for other uses. This has



The Dickelman Manufacturing & Lumber Co., Forest, Ohio, Are Enthusiastic Over the Trailer as a Means of Cutting Lumber Delivery Costs. The Illustration Shows One of Their "Trailmobiles" Attached to a Small Truck and Carrying a Good-Sized Load of Lumber.

Trailmobile

Trade-Mark Reg. U. S. Patent Office

**The Motorless
Motor Truck**

**Thousands
in Use**

DIVISION No. 1
Light Four-wheeled
Trailmobiles for use
with passenger cars or
light trucks, 1,250 lbs.,
 $\frac{3}{4}$ -ton and 1-ton.

DIVISION No. 2
Heavy-duty Four-
wheeled Trailmobiles
for use with trucks:
 $1\frac{1}{2}$ tons, non-rever-
sible; 2 tons; $3\frac{1}{2}$ tons;
and 5 tons, reversible.

DIVISION No. 3
Trailmobile Semi-
Trailers: 2 tons; $3\frac{1}{2}$
tons; 5 tons and 7
tons.

Load Up While the Truck is Away!

LUMBER hauling at moderate cost requires the use of some method by which the load can be put on while the hauling vehicle is away. Otherwise the standing, idle time of power plant runs up costs unreasonably.

Trailmobile hauling meets the conditions perfectly. When two or more Trailmobiles are used with a tractor, truck or passenger car, one can be always loading at the yard while the power unit is out making deliveries.

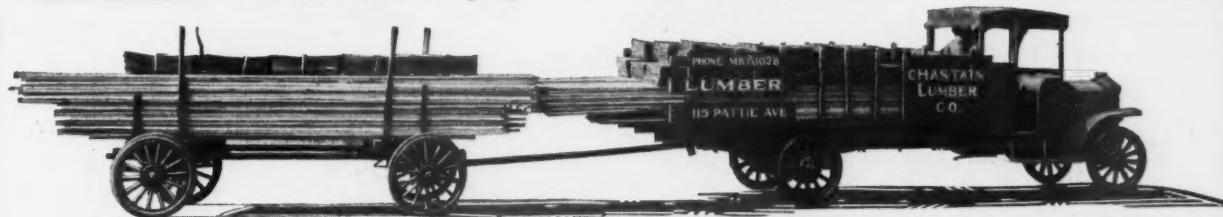
Hundreds of the leading lumber yards all over the country say the Trailmobile has supplied them not only with the least expensive and most convenient delivery system, but with the one that makes the quickest and best service to customers possible.

Write for booklet, "Economy in Hauling" and for special lumber folder that tells how lumber dealers everywhere are saving money with the Trailmobile.

The Trailmobile Company

583 E. Fifth Street

Cincinnati, Ohio



Good roads are preserved by reducing the load carried on each wheel.



You KNOW
Wolff Plum-
bing—is it worth
while to con-
sider any other?

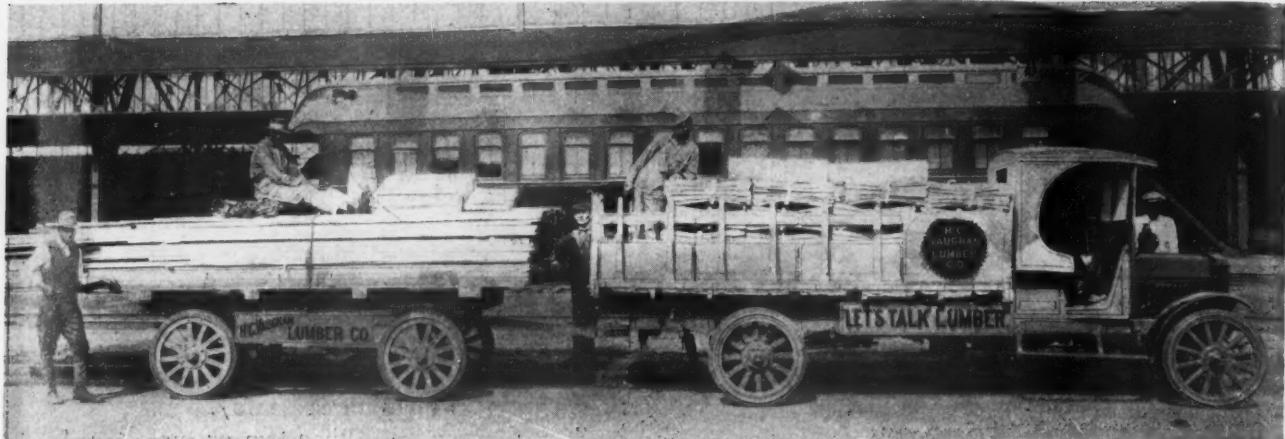
L. WOLFF MANUFACTURING CO.

Manufacturers of Plumbing Goods Exclusively

General Offices: 255 North Hoyne Avenue

Show Rooms: 111 North Dearborn Street

CHICAGO



The H. C. Baughan Lumber Co., Mobile, Ala., keeps a four-ton trailer loaded, so that it will be ready for the truck when it reaches the yard. Here is the company's two-ton "Federal" truck, starting out with a load of lumber for a contractor on a job eight miles in the country.

proved to be a most economical means of transportation."

The advantage of operating a trailer in conjunction with a small truck or passenger automobile, when compared with horse-drawn wagons, is that the truck and trailer are speedy and can cover a great deal more ground, permitting one driver to accomplish as much in a day as two would with a team. The cost of operation, too, is less per ton per mile than when deliveries are made with horse-drawn vehicles.

+

Excavating with a Motor Truck

EXCAVATING for a building, whether it be large or small, is a job on which motor trucks now are generally employed, and they have demonstrated their fitness for this type of work. Removing the dirt with horse-drawn wagons was a slow task, and an expensive one. But when the heavy-

duty motor trucks were put on the job, it was found a more simple task. The trucks, capable of carrying as much as seven tons of dirt and rocks, pulled up the incline from the excavation under their own power, saving not only several teams that would be required to do the same amount of work, but the wages of the men who were employed to drive them.

It is in the larger excavation work, however, that the motor trucks showed their efficiency. Steam shovels scooped up huge rocks and tons of earth and dropped their loads into the motor trucks, many times putting on the capacity of the truck in one operation. Then the truck would pull away and another would take its place, ready for the next load the shovel took out.

This method of excavating was one of the things that first brought motor trucks into prominence as commercial vehicles. The first trucks made, with frames of rail iron, proved capable of handling



The Thomas Forman Co. Operates Two Semi-Trailers in Connection with Its Ton-and-a-Half "Federal" Truck. Note the One-Horse Dolly That Is Used to Haul the Semi-Trailer About the Yard.

Miami Trailers Will More Than Double The Value of your Truck or Automobile

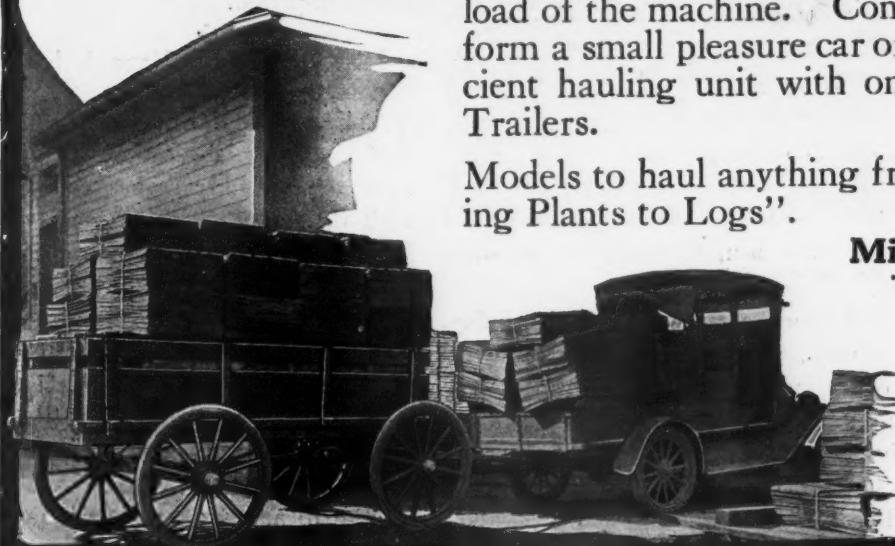
They are built in capacities, from 800 to 6000 pounds. Twenty different models with a body to suit your particular business.

This Model No. 3 is being pulled by a Ford with three times the load of the machine. Contractors can transform a small pleasure car or truck into an efficient hauling unit with one or more Miami Trailers.

Models to haul anything from "House Lighting Plants to Logs".

Miami Trailer Co.
Troy, Ohio, U. S. A.

Put your hauling problems up to us. Let us Demonstrate that you can Solve your Transportation Troubles. Send for Literature.



FOR REAL ECONOMY IN ALL BUILDING



For every exterior and interior use. Water proof, weather proof, rust proof, fire retardant and sound deadening.

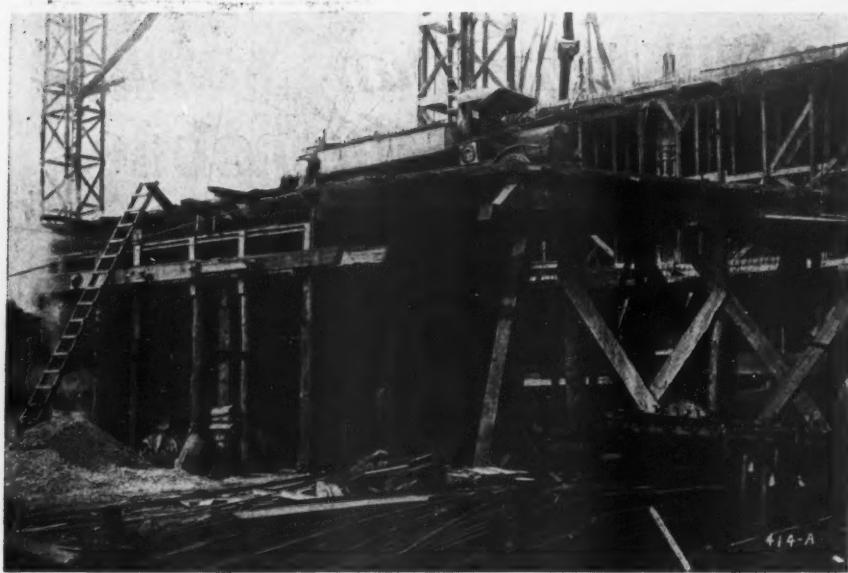
In these Gary houses E-Cod Fabric was applied directly to the studs, (16" on centers). It saved sheathing, as the felt backing made the walls weather proof and water proof, incasing the structure in a reinforced plaster slab.

Group of Model Bungalows, Gary, Ind.
Buck & Cenek, Chicago. Architects
Lennox-Haldeman Co., Chicago,
Plastering Contractors.

E-Cod Fabric saves 40% of the entire scratch coat usually required to form the key. Specify and use it for economy, strength and durability.

MacADAMS & CALL
Conway Building, Chicago





Here Is a "White" Truck in Use by the Cleveland Builders' Supply Co., Delivering Materials to a Big Building Job.

exceptionally heavy loads easily and economically. These facts appealed to business men, and soon trucks were employed on all sorts of haulage jobs.

The accompanying illustration shows a heavy-duty motor truck about to receive a huge ball of earth and stones, so large, in fact, that the shovel was unable to scoop it up, but lifted it after a chain had been fastened around it. This mass of earth and rocks tested the strength of the truck, but the sturdy body stood up under it, while the motor easily hauled it out of the excavation.

Motor trucks, both heavy duty and light, are now

work are bulky, and the problem that confronts the planing mill man is to secure hauling equipment that will take a load large enough to be economical to carry.

Since motor trucks have come into general use in the building industry, many types of bodies have been designed, each one to answer certain requirements. The stake body with a broad bed is peculiarly suited to the needs of the manufacturer of millwork and other materials large in size but not heavy.

The truck owned by the A. G. Stivers Lumber Co.,

essential parts of the equipment of building contractors. They get on the job when the excavation is started and continue to haul materials and equipment until the work is finished. Trucks not only speed up the work, but do their part so well that fewer men are required, which is an important consideration at this time, when labor is scarce and high-priced.

+ Delivering Millwork by Auto Truck

DELIVERING millwork to the building job does not require so much weight-carrying capacity as it does area of the body of the automobile truck. Window and door frames, sash and other mill-



Tons of Dirt and Rock Are Taken from the Building Excavation by the Steam Shovel and Deposited in the Motor Truck. Here Is a "GMC" Truck Waiting for Its Load. Contractors Speed Up Their Work and Do It Economically with Such Motor Trucks.



As if Especially Built for the Building Business

KISSEL Trucks stand up under continuous service and capacity loads—they are powered for any grade—geared for consistent speed and designed for adaptation to your every haulage requirement.

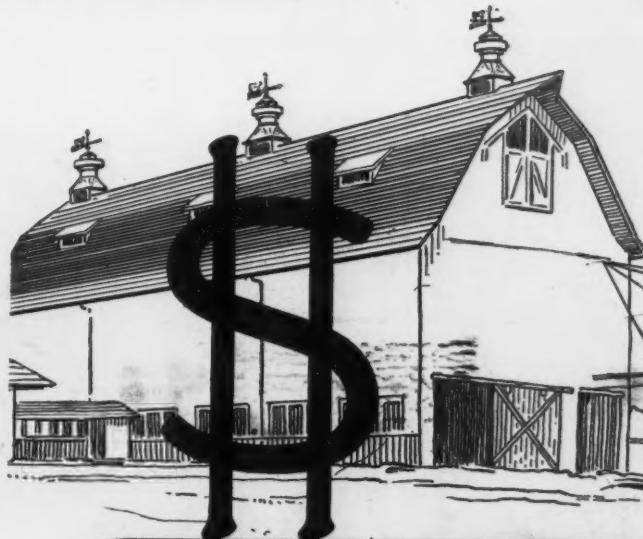
Dependability—power—economy—long life—stamina to get there and back—the very characteristics you would build into a truck were you the designer.

The unusual strength of the Kissel Truck chassis, the advanced engineering principles and structural features, the Kissel-built power-plant, brakes of locomotive strength—these are the real sources of Kissel Truck superiority.

Kissel Truck owners in ***the Building Business*** will gladly verify Kissel Truck superiority. See your nearest Kissel dealer. Five different sizes— $\frac{3}{4}$ -ton to 5-ton models.

KISSEL MOTOR CAR CO., Hartford, Wis., U. S. A.

**KISSEL
TRUCKS**



There's Real Money in Barn Building For You

Think of the barn jobs in your community that you could get with the help of James service. Farmers are today awake to the needs of better built barns and are finding exactly what they want in James Barns and James equipment. They are reading our advertisements in their leading farm papers—and they know through years of service the matchless quality of anything in barn equipment bearing the James trademark.

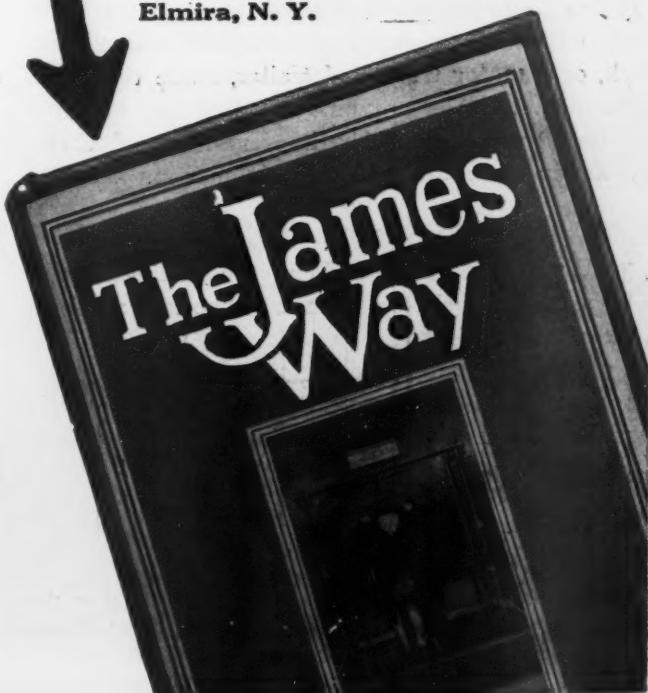
Send us the names of farmers you know who wish to build or remodel their barns, and mention the size of their herds. We will circularize the farmers whose names you send us, and will send you our book

The James Way—FREE

Our book should enable you to suggest to your customers the most practical way to handle their barn problem—how they can save time and work about the barn—get the right plans—avoid mistakes in building—best ways to arrange equipment—provide lighting, ventilation, make good use of floor space, etc.

*Take advantage of our service and
get more and better barn contracts*

James Manufacturing Co.
EP-76 Cane St., Ft. Atkinson, Wis.
Elmira, N. Y.





A Load of Millwork for the Contractor. A. G. Stivers Lumber Co., Chattanooga, Tenn., keeps this "Federal" truck busy delivering window and door frames and other work to their customers. By using the stake body large loads are easily carried.

shown in the accompanying illustration, is one of those specially designed to handle materials such as are loaded on the Stivers hauling equipment. It will be noted that more than forty frames have been piled on this stake body and are held securely in place with strips. This good-sized load can be transported to the building site quickly. Not only does the truck carry a much larger load than it would be possible to get on a horse-drawn vehicle, but its speed enables it to make two or three trips to one of a wagon.

It has been proved thru the experience of hundreds of millwork manufacturers that the motor truck, or a motor truck and trailer, make the most economical haulage equipment, when the mileage and tonnage are considered. Hundreds of them now are in use, and the number is growing rapidly.

♦

Importance of Porch and Lawn

NEW YORK home builders are finding that a porch and well-kept lawn are important adjuncts to their homes and in the suburbs real estate men say that a porch and attractive grass plot add \$1,000 and sometimes much more to the selling price of a small house. A well-proportioned porch with rail flower boxes can be built on almost any residence, large or small, and this with well-trimmed turf and some shrubbery is a big asset to a home.

♦

PLANS, diagrams, and photographs make more clear the ideas expressed in the Correspondence Department. When you ask a question or answer one, or give your fellow builders an idea, illustrate it if you can.

Building for the Future

"WHENEVER I see one of these two-story fronts on a lean-to store building, I am reminded of the Culebra Cut," observed the Smoking-Car Philosopher.

"A thing to be impressed with when you look up at it in the present, but of very little account once you pass it and look back.

"Now, of course, the Culebra hill was a very real and great obstacle in the course of a very real and great work. But who thinks about that now. If you should see 'Culebra Cut' in the headlines you would catch yourself wondering what part of Jugo-Slavia Mr. Culebra was Prime Minister of, and who cut him.

"But do you remember the days when scores of steam shovels bit and clawed at its sides and you looked first into the morning paper to see whether shovels or slides had the best of it the day before?

"The shovels won and Culebra is dead. A whole fleet of warships sailed right by Culebra the other day and never even fired a salute.

"It's the same old story in every-day life. Every one of us has been confronted sometime with a future that loomed over him like Culebra itself, threatening to slide over and block his path.

"Most of us have kept right on with a full head of steam on our own particular steam-shovel and by and by our scratching has had its effect. After we had scratched a while, we could buy a little bigger steam-shovel and scratch harder. And when we got a good bankroll collected, nobody could tell us there ever had been a Threatening Future."

"I'm scratching all I can to buy Liberty Bonds at 'the market,'" observed the Silent Man in the Corner.

"Righto," agreed the Philosopher. "Culebra would have to slide uphill to hurt them."

—BUY W. S. S.—

♦

YOU are missing many short but valuable articles if you fail to read the Correspondence Department.



USE

MIDLAND TERRA COTTA

FOR MODERN BUILDINGS

Business winning storefronts,
self-renting apartment build-
ings and attractive structures
of every description are
assured through the use of
MIDLAND TERRA COTTA.
Perfect satisfaction guaranteed.

MIDLAND TERRA COTTA COMPANY

Lumber Exchange Building
Chicago, Illinois



The Stanley Works Build Homes to be Sold to Their Employees

FIFTEEN FIVE AND SIX-ROOM MODERN FRAME AND STUCCO HOUSES ARE NOW UNDER CONSTRUCTION NEAR THE PLANT AT NEW BRITAIN, CONN.

MANY large manufacturing concerns have decided that an excellent method to hold their workmen is to provide them with modern, comfortable homes, near their work. Some companies have constructed houses, which are rented to their employees; others have built the homes and sold them to the workers, giving them terms by which they acquire property without burdensome economy.

The Stanley Works, New Britain, Conn., have adopted the latter plan. The company now is erecting fourteen houses near its plant and will sell them to its employees on easy terms. And this is but a fore-runner to a larger housing project, if it is found that the present one is successful.

Regarding the project, R. H. Young, advertising manager of the Stanley Works, says:

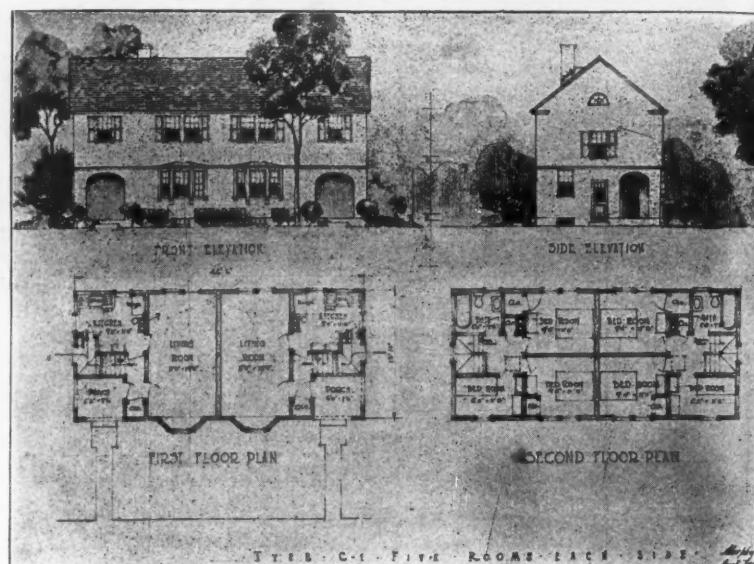
Homes Modern in Every Respect

"These homes will be on a new street that will be paved, the curbs and sidewalks laid and the necessary grading done. There will be seven single houses of six rooms each, and four double houses, two with five rooms and two with six rooms. Each single house will be placed on a lot 50 by 120 feet, and, of course, double that frontage for the double houses.

"The street on which these homes are being built is within a very few minutes' walk of the factory. The homes will accommodate fifteen families and are to be sold only to employees. They

are of frame construction, with stuccoed exteriors. Murphy & Dana are the architects, the Aberthaw Construction Co. the contractor and Olmstead Bros. the landscape gardeners. The homes will be ready November 1.

"The building of homes to be sold to employees is a new idea for the Stanley Works, as heretofore it has not been necessary. As this is our first opportunity



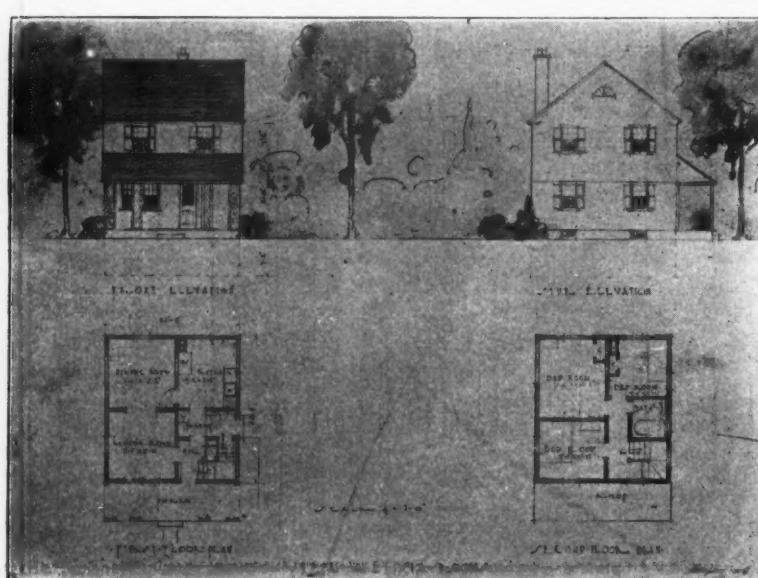
Elevations and Floor Plans of the Double Houses of Six Rooms Each That Are Being Erected for Sale to Employees by the Stanley Works, New Britain, Conn. Murphy & Dana, Architects.

to be of assistance to any extent along these lines to our employees, we feel that this new street, new homes, with electric lights, gas, hot water heat and all modern improvements will be a fine start and will be an incentive to do likewise to the other manufacturers of New Britain."

Good Homes Hold Workmen

Providing comfortable, modern homes for their employees has been found by many manufacturers to be the solution of the problem of cutting down "labor turnover." During the war when manufacturers of munitions were bidding against each other for workmen, it was difficult to keep an efficient force together, while many employers were unable to hold their men because there were no homes for their families. Building homes and selling them to efficient workmen will be a part of the business of industrial corporations in the future.

Many corporations now have such building projects under way; others are planning to construct modern, comfortable homes.



Elevations and Floor Plans of the Single Houses of Six Rooms Each that Are Being Erected by the Stanley Works, New Britain, Conn. Murphy & Dana, Architects.



A finish like beautiful glass

Unovernish, as a Murphy product, has definite prestige in the minds of thousands of potential house-holders. It typifies a quality attained by more than half a century's manufacture of the finest finishes. It will completely satisfy your clientele.

Unovernish gives porous woodwork a surface almost as hard as glass—impervious to grease, and one which boiling water will not injure or turn white. From drawing-room to kitchen it assures a beautiful and cleanly finish—which may be rubbed to a dull, soft semi-lustre when desired.

These characteristics appeal widely to all—and particularly to women. And women are the real home-makers.

Please write for specifications and samples.

Murphy Varnish Company

FRANKLIN MURPHY, jr., President

NEWARK

CHICAGO

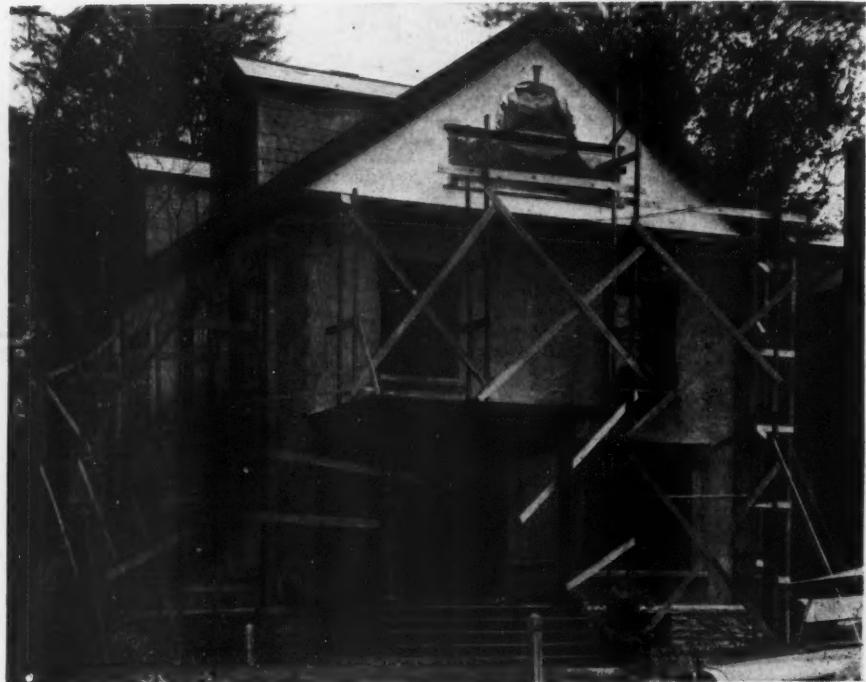
The Dougall Varnish Company, Ltd., Montreal, Canadian Associate



Overcoating a Brick House with Stucco

WELL-BUILT brick homes are too valuable to be torn down. Even tho the walls have become weather-stained and the architectural design is out of date, there is a simple and comparatively inexpensive method by which the contractor can convert the old home into a modern dwelling. That is by overcoating it with stucco, and, perhaps, changing the roof lines and adding a porch, or a bay.

The accompanying illustrations show how a Cincinnati stucco contractor converted an old brick house into a modern home with stucco. The top illustration shows the house during the progress of the work and the bottom picture the home after it was completed. The architectural design of the house was not changed, but its appearance was greatly improved. One interesting feature shown by the pictures is that the brick corners were retained as exterior trim.



Overcoating an Old Brick House with Stucco. Showing the Building After the Scratch Coat Is On.

Overcoating with stucco is a modern method of converting old homes into new ones. When the old homes are of frame, it is a simple matter to cover the siding with wood or metal lath and apply the stucco. Moulding to build out the window and door casings gives the stuccoed house the appearance of a new building. When the stucco is applied over brick or tile, the lath oftentimes is not necessary.

The stucco on the home shown here was applied by an electrically driven stucco machine. This made it possible for the workmen to apply the stucco quickly and well, as the view of the completed home shows.



The Brick House After It Had Been Overcoated with Stucco. Note the Corners Where the Brick Have Been Retained as Exterior Trim.

THE department "Catalogs, Bulletins and Books Received," which appears in the AMERICAN BUILDER, is valuable to every member of the building industry. Here are listed catalogs and books that are instructive, as the publishers not only tell about the materials, tools and equipment they manufacture, but give many excellent building methods. All of this information is placed at the disposal of the readers of the AMERICAN BUILDER without cost, other than the postage required to ask for it.

Vulcanite

FAMOUS for QUALITY

Slab Shingles STYLE "L"

**Protect Your Roof---
- - - You Protect All!**

Vulcanite Slab Shingles, Style "L" will protect your roof like few other roofings will. It is not surprising when you know the facts. They are an asphalt shingle surfaced with crushed Red or Green Slate. The saturation, coating and surfacing defies the elements at their worst. Are also fire-resisting. The charming tones of Red and Green add distinctiveness to any home, and besides, the colors are non-fading. Slab Shingles are laid in about one-half the time required for laying ordinary shingles—and time saved is money saved.

Dealers — Contractors

Write us for our "Dealer Helps." They will show you how to increase your business. Samples, prices and full information gladly furnished upon request.

Patent Vulcanite Roofing Co.

Chicago, Kansas City, San Francisco, New York,
Cincinnati, Birmingham, Minneapolis, Albany,
Anderson, Ind., Franklin, O., Buffalo

The Fort Madison, Ia., Industrial Housing Project

ONE HUNDRED HOMES BUILT AND SOLD TO EMPLOYEES OF A TIRE COMPANY—
MANY ARCHITECTURAL STYLES USED

AN industrial housing project that, because of the great variety and excellence of the designs used, has attracted wide attention, is that of the Perfection Tire & Rubber Co., Fort Madison, Iowa. The company erected a new plant some two years ago, and its building plans were made to include some hundred homes for its employees.

The accompanying illustrations give a good idea of the exceptional high grade of these dwellings, which are of attractive architectural design. All are of substantial construction, of frame, hollow tile and concrete block. As will be seen in these illustrations, a number of types of architecture, Dutch Colonial, Southern Colonial, bungalow and the square designs, were used.

This is in some ways one of the most interesting industrial housing projects in the United States. The company owns more than 300 acres surrounding its

factory, which is shown during construction in the center of the two groups of illustrations. It employs more than 500 men, and to supply their families with modern homes, the housing project was launched.

Modern Homes for Workers

The whole industrial community was laid out upon the most scientific and advanced town planning lines. The smallest lot is 50 by 140 feet. The streets were paved with concrete and concrete sidewalks laid. Landscape gardeners were employed to beautify the tract. Ample recreational facilities were provided, the company believing that these are essential in maintaining the morale and contentment of its employes, most of whom are young married men brought from larger cities and accustomed to modern homes and the amusements cities afford.

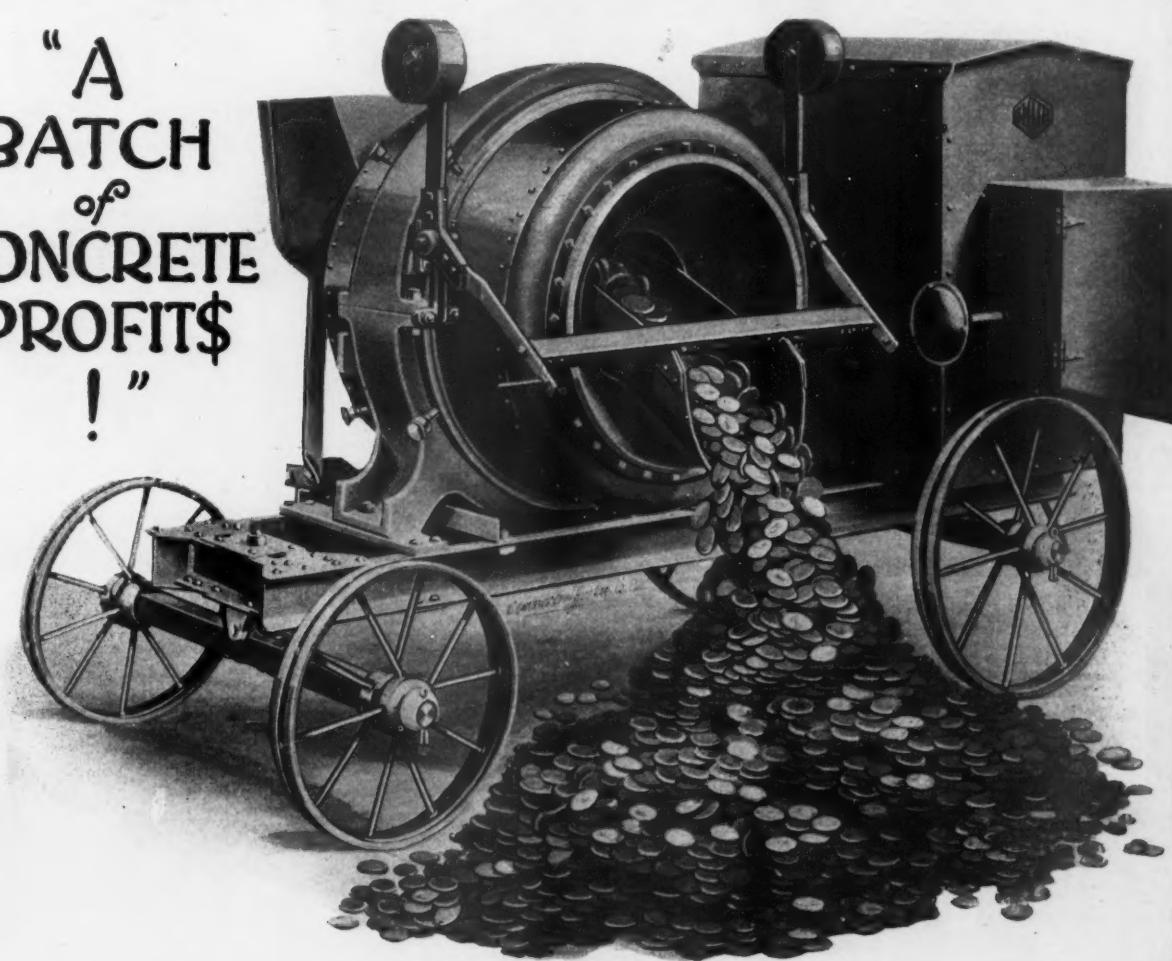
Water and sewer systems were installed, and elec-



INDUSTRIAL HOUSING PROJECT, FORT MADISON, IOWA. Beginning at the Top, Left to Right—Six-Room Dutch Colonial; Six Rooms of Frame and Shingle Construction; Hollow Tile to Be Covered with Gray Stucco; Hollow Tile to Be Covered with White Stucco; Six-Room Frame House; Hollow Tile to Be Stuccoed, with Shingles on Upper Floor. Center Picture Shows Office Section of Tire Plant, Sprinkling Tank Tower, and First and Second Units of the Plant. Five-Room Dutch Colonial and Five-Room Frame House. Bottom Row—Six-Room Home of Brown Rough Face Cement Block with Stucco on Second Story; Five-Room Bungalow and Panel Face Concrete Block House of Five Rooms.

\$—A DOLLAR SAVED IS A DOLLAR MADE ————— A DOLLAR SAVED IS A DOLLAR MADE ————— \$

**"A
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of
CONCRETE
PROFIT\$
!"**



**This, a veritable MINT, is the popular
SMITH MIXERETTE—**

On Trucks with Gasoline Engine and Power Loader.

The Smith Mixerette is a high quality small capacity mixer, built for small jobs such as silos, culverts, sidewalks, curb and gutter, etc. It is also used extensively by industrial plants who do their own concrete work, and by large contractors for their small jobs and for finishing up their large jobs.

The Smith Mixerette will easily turn out 50 cubic yards of mixed concrete in a day with a small crew. Its capacity per batch is 4 cubic feet of mixed concrete, or 6 cubic feet of loose unmixed material.

Write Today For Descriptive Matter.



The T. L. Smith Company
3186 W. Hadley Street

Milwaukee

Wisconsin



\$—A DOLLAR SAVED IS A DOLLAR MADE ————— A DOLLAR SAVED IS A DOLLAR MADE ————— \$



INDUSTRIAL HOUSING PROJECT, FOR MADISON, IOWA. Top Row, Left to Right—Five-Room Bungalow; Eight-Room Frame House, 32 by 32 Feet; Six-Room Frame House. Second Row—Four-Room Frame House; First and Second Units of Perfection Tire & Rubber Co.'s Plant; Six-Room Frame House, with Stuccoed Exterior. Third Row—Five-Room Dutch Colonial; Eight-Room Frame, 26 by 28 Feet; Five-Room Bungalow. Bottom Row—Five-Room Bungalow; Eight-Room Frame House.

tricity secured from the Keokuk Power Co., at Keokuk, 20 miles away. The city street car company extended its line to the property, and no home is more than two blocks away from it.

The homes were constructed by the Industrial Securities Co., of Chicago, thru its real estate department at Fort Madison, under the direction of A. H. Burg. They are of five sizes—four, five, six, seven and eight rooms. All homes were built on full concrete foundations and have concrete basement floors. The basements were partitioned off, giving storage room, coal room, vegetable room, a screen and sash storage room, and the balance used for the heating plant and laundry purposes. Stationary tubs, electric lights, laundry stove and electric plugs were installed.

Electric Ranges in Kitchens

The kitchens contain electric ranges, ventilation hoods and sinks and kitchen cabinets. All of the floors are of oak, while the first floor trim is of oak and the

upper floors of enameled pine. The side walls of all the houses were insulated.

Besides the ordinary frame construction, the homes are of stucco on frame; stucco on tile, concrete block and tile. All of the concrete blocks were made on the ground.

The homes were sold to the employes on easy terms—\$10.50 per month for each \$1,000 of cost. Where it was possible to do so, the company secured an initial payment of 10 per cent, but this was not insisted on. Of the monthly payments, \$8 applied on the principal and \$2.50 on the interest. The selling price was fixed at 10 per cent above the cost, to take care of the expense of maintaining an office and collecting the installments.



A PROBLEM in building that is difficult to you, may be easy to another man. What is difficult for him may be easy for you. By an exchange of information thru the Correspondence Department all profit.



You forget low prices and good workmanship when your sheet metal work becomes pitted, pinholed, worthless within a few months after installation.

You realize then that low-grade sheet metal is the dearest sheet metal you can buy.

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Toncan Metal will outlast good ordinary sheet metal two and three to one. It costs less per year of satisfactory service than any other sheet metal.

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Am. Bldr. Sept. '19

Build Tiny Town to Promote Home-Owning

MISSOURI CITY ENLISTS ITS YOUNG PEOPLE IN UNIQUE CAMPAIGN—BOYS BUILD HOUSES AND GIRLS DECORATE THEM—HOW THE YOUNGER CHILDREN WERE INTERESTED

By Louis Plank, Secretary Springfield Chamber of Commerce

THREE is no more effective way of getting the people of a community interested in a subject than first to get all the young people and children, or as many of them as possible, interested in it. This fact is well illustrated by the "Build Now" campaign in progress at Springfield, Mo., which, altho not ended, has already produced splendid results in increased building activity, and still greater results along the lines of publicity and awakened interest in home building and owning. The chief feature of the campaign is the building, by the students of the manual training departments of Springfield's eighteen public schools, of a miniature city, to which the name of "Tiny Town" has been given.

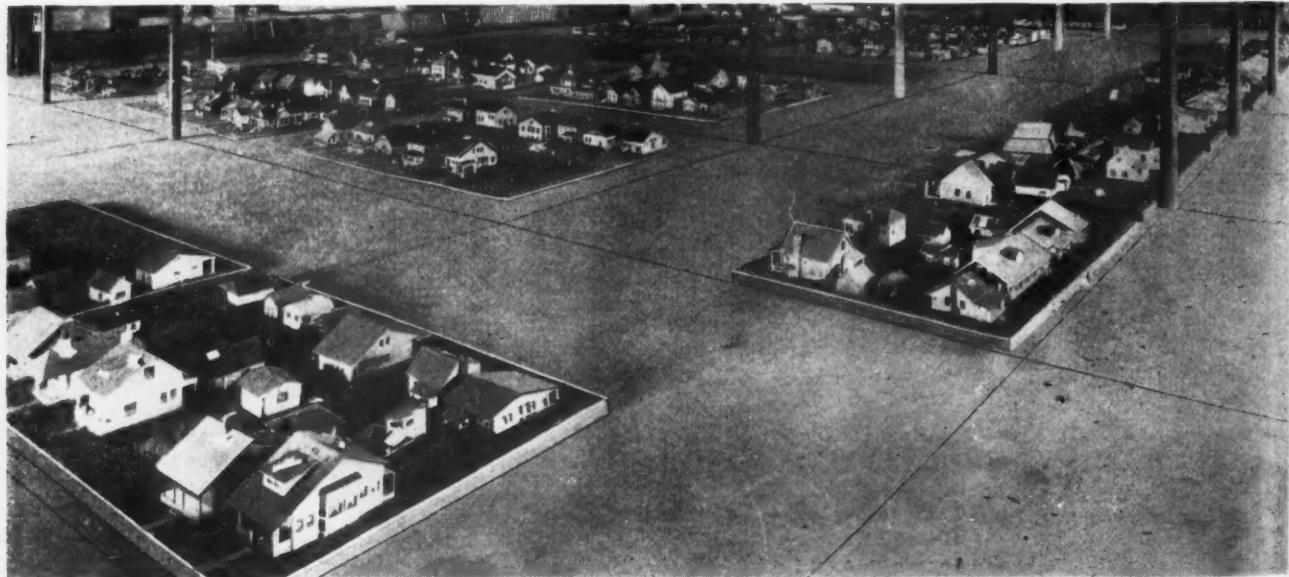
The "Tiny Town" idea was originated and put into execution by W. H. Johnson, of Springfield, local director of publicity for the "Build Now" campaign, with the co-operation of the Chamber of Commerce, of which Dan M. Nee is President and Louis Plank is Secretary. The campaign is financed by the voluntary contributions of interested business men, amounting to about \$5,000. The plan has had the hearty support of the school authorities. Supt. W. W. Thomas strongly believes in teaching boys and girls, along with their regular studies, how to become real men and women, how to acquire homes and assume the functions of citizenship. He therefore conceived the idea of interesting them in civil government by allowing them to hold an election, first deciding by vote of the students as to women's suffrage; that is whether the girl students should be allowed to vote

for the various offices to be filled—for Tiny Town must have a mayor and full set of city officials. This burning question was voted upon, and, sad to relate—from the standpoint of the girls at least—the proposition was defeated. A campaign for the adoption of the commission form of government was then carried on by the students. Their political announcements were published in the daily papers just as before a regular election. The officials elected had charge of the administration of Tiny Town during the period of its exhibition in Convention Hall, when the prizes were awarded and the public had its first view of the finished city—built complete in ten weeks by public school pupils under the direction of their manual training instructors.

Students Build 1,000 Home Models

There were, all told, about 1,000 houses. As they were built by different students, the building contest—for prizes were awarded to schools and individuals for best work—carries the "Build Now" propaganda right into about 1,000 homes, for it is easy to see that the progress of the contest would be a daily subject of discussion in the family circle. Further, as the children of eighteen schools were participating, practically every precinct and block in the city was represented.

On the accompanying photograph it will be noticed that the houses are all different in design and that they closely follow in miniature, correct plan designs of ordinary frame house construction similar to the majority of the homes of average American people.



"Tiny Town," of Model Homes Built to Scale by the Boys in the Manual Training Department of the Public Schools of Springfield, Mo. This Exhibition Was Used to Help the Build-a-Home Campaign at Springfield and Brought Excellent Results.

THE ONLY SCREW HOLES IN THE WORLD

You drive the screw holes with a hammer in any material.

The screw holes are made for wood screws or machine screws to fit all sizes of screws. The head is removed and you leave a permanent screw hole.

The Stine Screw Holes Co.

Manufacturers
WATERBURY, CONN., U. S. A.
DEPARTMENT AB

Once a Screw Hole, Always a Screw Hole

The Biggest Little Thing in the World

Some of the Reasons Why Screw Holes Will Be Bought and Used and Not Become Dead Stock for Anyone

- 1—They can be used without damage to receiving material.
- 2—They enable you to standardize to wood or machine screws in all material.
- 3—They are made of brass and will not rust under atmospheric or moisture conditions.
- 4—ECONOMY—They save more time value than the holes cost.
- 5—You get them for nothing and are paid for using them when you count time saved.
- 6—Screw holes have been needed ever since the first screw was used.
- 7—Special tools are NOT needed in using them in any material.
- 8—They can be used in any place a screw can be used.
- 9—By using screw holes, screws can be used in many places, and in many materials where it is impossible to use screws without them.
- 10—These are the only ready-made screw holes in the world.
- 11—No special screws are needed. These screw holes fit any wood screw or machine screw now in stock.
- 12—They make the neatest possible job in any material.
- 13—Every store where screws are sold must carry them in stock, because the line of screws is not complete without screw holes for them.
- 14—Every shop and factory where screws are used must also have these screw holes to fit the screws.
- 15—They are endorsed by all dealers in screws and by all users of screws.
- 16—Screw holes are entirely new and the world supply is yet to be furnished.
- 17—This is a progressive Old World of ours, and every active person in it must adopt all improved methods, and all new articles that will help him keep in the front line of progress.
- 18—Be among the first to stock up in screw holes if you are a dealer in screws.
- 19—Be among the first to install screw holes in your shop or factory, as you begin to save money soon as you use them.
- 20—In spite of the high cost of brass, screw holes are yet cheap.
- 21—We are letting the world know that screw holes can now be secured, by means of extensive advertising in all the principal Trade Journals that have the largest circulation among dealers in screws as well as users of screws.
- 22—Do not let your customer ask you for screw holes before you have them in stock. BE A LIVE WIRE.
- 23—They make everlasting holes in any material.
- 24—They mean "Plug-No-More" screw holes.
- 25—They are the result of Necessity being The Mother of Invention.
- 26—Anyone who can drive a nail can use screw holes.
- 27—Send for a sample and convince yourself.
- 28—Mechanics who see them say, "What do you think of that?"
- 29—In fact there are NO REASONS why screw holes should NOT be used.

Each of these reasons are enough to sell Screw Holes. There are many other reasons.

Write at once for our handsome Color Card showing screw holes in various materials which will be sent on request, together with samples and price list.

The houses are built on the scale of $\frac{1}{8}$ -inch to the foot. The complete city is based upon 155 acres, reduced to the same scale. It has properly laid out streets, parks, etc., with real grass and flowers.

The building of Tiny Town began May 4, and continued to June 25, at the end of which period the completed city was placed on exhibition, and cash prizes aggregating \$300 were awarded to the schools and individuals that, in the judgment of a competent committee, had done the best work. Other attractive features in the way of movies and high-class entertainment for the grown-ups was featured at Convention Hall during the exhibition of Tiny Town the week beginning June 25. A small admission fee was charged, and in view of the great amount of publicity that had been given thru the newspapers and otherwise, and the personal interest felt in a great many homes, the attendance was large. At the close of the exhibition a regular auctioneer sold to the highest bidders the houses of all the boys who wished to dispose of their buildings and many of the prize-winning structures were displayed in the windows of the leading stores of the city.

The Poster Contest

The publicity and promotion possibilities of the Tiny Town enterprise were by no means exhausted by the actual building of the houses and the personal and newspaper discussion resulting therefrom. In fact, that has proved to be only a start, and the great value of the plan lies in the fact that it possesses almost unlimited ramifications and variations that will suggest themselves to a fertile mind and may be readily worked out along lines to fit any city, community or school where the idea may be adopted. One of the best "stunts" developed was a poster contest for the 600 or 800 children not engaged in the building contest. Cardboard poster sheets, 14 by 18 inches, printed uniformly at top and bottom, the intervening space being left blank, were furnished the children. The printing at the top read, "A Prize for Tiny Town," and at the bottom, "Save Money—Build Now."

Results of the Campaign

The campaign, as a whole, has resulted in a great amount of publicity for the home owning movement. The newspapers have been very generous with their space, running a number of stories on their front pages; in fact, there has hardly been a day in which something about the campaign has not appeared. There also has been unlimited discussion in the home circle, in the schools, on the streets, in fact, wherever people congregate. Whether entirely due to the "Build Now" advertising and Tiny Town or not, Springfield is enjoying an unprecedented building boom. The Tiny Town idea is to be carried out next year on a larger scale, this time in the open. A ten acre tract will likely be devoted to plotting and landscaping the Tiny Town of 1920.

Novel Interior Trim for Summer Home By C. P. KOPPERMAN

AN unusual interior trim in a summer residence on Lake Erie is shown in the accompanying illustrations. The ceiling is paneled off with halved logs, 10 inches in diameter, of white Adirondack birch. The window and door casings are of six-inch slabs of white birch. The window stools are of birch finished in mahogany. The newel and rail of the stair to second floor is white birch limbs. The risers and treads are finished in mahogany. The panels in ceiling and sidewalls are papered with a Japanese seagrass



Dining Room of Summer Home. Fine Example of Built-In Buffet and Sideboard.

paper of a delicate green. The fireplace is made of field stones gathered in the neighborhood.

The dining room is finished in Flemish oak and contains a built in buffet of pleasing design. The hardware on this buffet is hand wrought and of solid brass.

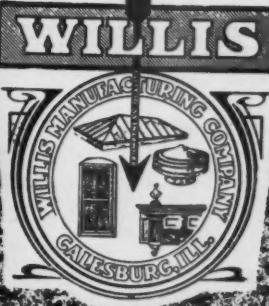
The exterior of the house is very pleasing. Finished in stucco composed of white cement and white sand and waterproofing; the red tile roof and green window shutters form a pleasing contrast.



Interior of Novel Summer Home, Showing How Rough Birch Logs Were Used for the Trim in the Living Room.



WILLIS SHEET METAL PRODUCTS



Include everything in sheet metal construction that is of interest to the progressive Builders. There are Willis products for all your jobs that will prove to be money-makers for you.

VENTILATORS

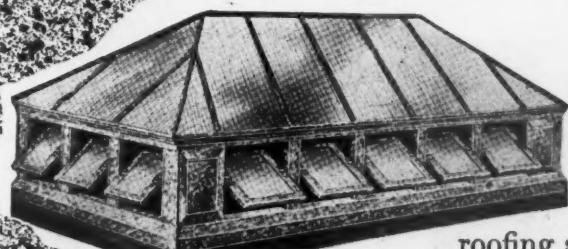
that are made for service wherever fresh air is needed, on any type of building. Backed by thirty years' experience in the manufacture of high-grade ventilators. They are made in many sizes and in various styles. They are built to give lasting satisfaction and service.



SKYLIGHTS AND WINDOWS

Our skylights are made for double duty—for perfect ventilation and the greatest possible amount of light. They are made of the best quality sheet metal with condensation gutters and bars. We guarantee them not to leak, sag, buckle, bend or break.

Every farmer is a prospective customer. Let us send you plans for a complete Hog House. You cannot afford to be without them. They are free to you upon request.



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Planning and Building a Satisfactory Basement

WHAT THE BASEMENT OF THE HOME SHOULD BE, WHAT IT GENERALLY IS AND HOW IT SHOULD BE CONSTRUCTED TO GIVE BEST POSSIBLE RESULTS

By Arthur Weindorf, Architect

IN modern homes of today the basement or cellar is as important as any other part of the home, and it should be arranged and planned so as to assure the greatest efficiency in regard to the vitals of the home that are located here. It should also be well-lighted and ventilated and finished so that it can be kept absolutely clean without involving a great amount of labor, thereby protecting the health of the individuals that occupy the home.

The picture created in the minds of most people at the mention of the words "Basement" or "Cellar" is a place of indescribable disorder, where all the objects that have been cast out of every day use are collected, to be thrown out some day that never comes, and that gradually become covered with a white film of powdered ashes. With this conception of disorder the odor of dampness is usually associated.

The Old-Fashioned Cellar a Disorderly Place

Going into this part of the home, down a rickety stairs, with a flickering candle in hand, keeping in a stooped position so that one's head will not come in contact with some extending pipe or beam and using great care in groping around to avoid falling over some dusty, cob-web covered family heirloom is a very unpleasant task. This should not be so. It should be a pleasure to take care of one's duties here, just as much so as one would have in taking care of his affairs in the parlor or living room.

The basement is just as important and perhaps more so than any other part of the home, as here are located

many important items. Many varieties of foodstuffs are usually stored here. The furnace room, storage space for coal and wood, space to take care of the ashes and a place for the laundry are usually provided here. Also a place for screens, shutters, storm sashes, trunks is provided, while boxes and many other articles too numerous to mention will have their proper rack or shelf and so protected as to be free from dust.

Direct access should also be had to the shutting off of the water supply, cleaning of house drain and trap. The gas and electric meters should be located so that they are accessible and easily read, so that it will be convenient to examine or repair these essentials of the home.

Ridding the Basement of Objectionable Features

Ridding the basement or cellar of their objectionable features was first successfully solved in the modern city business building. It is not unusual to find well-fitted establishments that have well-patronized basements or even sub-basements in these modern structures.

If this difficulty can be overcome in buildings of this type, which make their basements a pleasure to visit, there is no reason why similar methods should not be applied to the smaller home where practically the same difficulties arise on a smaller scale.

For the past number of years the basement has gradually developed from a sort of unused dark and damp place into what it is today. Nowadays, successful designers of homes realize that the story below

grade requires as much attention as the floors above. As a consequence homes built from these designs have basements which are convenient and contribute in a large measure to the well being and comfort of the owner.

No ironclad rules can be laid down stating just what should be provided in a basement, as the locality in which the home is constructed is an important consideration, and the question of the furnace, whether the home shall be provided with one or not, must be given thought. The individual preference of the owner is also an important factor to be considered. However, the general arrangement can be applied to meet all conditions and requirements.



The Old-Fashioned Basement Was a Disorderly Place, Not to Say Insanitary and a Nuisance.



No other board will meet this test like

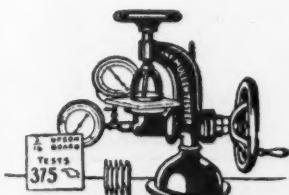
UPSON BOARD

You can prove for yourself in a minute or two that Upson Processed Board will hold to the nails when other boards pull away. The reason is simply because Upson Board is nearly twice as strong as any other wood pulp board.

If the experiment is done fairly, and all tests made under the same conditions, you will find it takes about twice as much strength to remove the Upson Board. And usually the Upson Board will pull the nail right out of the joist, while other pulp boards will invariably tear away.

What this test means—

Every building settles and all new framework shrinks, causing plaster to crack, and cheap weak boards to pull away from the nails.



This machine proves Upson Board nearly twice as strong as other boards. Most pulp boards test but 220 to 240 pounds to the square inch. Any stock panel of Upson Board should test more than 350 pounds to the square inch.

The scientific testing machine used by the U. S. Government conclusively proves this—but you can prove it for yourself in the following simple manner:

1. Secure a sample of Upson Board about 6 x 12" and samples of any other wood pulp boards you may know.
2. Nail each sample to a joist with one barbed flat-head nail 1" long, placing the nail half way from each end and $\frac{1}{2}$ " from the edge. Be sure each sample is nailed at the same height (to get the same leverage in pulling).
3. With a STEADY pull, without twisting or jerking, pull each sample away from the joist

UPSON BOARD easier to handle

Many carpenters say they can apply a third more Upson in a day than they can of the soft, spongy boards that break and crumble.

Many a builder is making a reputation for himself by specifying and recommending Upson Board wherever wall board can be used. The result is always a satisfactory job if properly applied—a job that is as permanent as the building itself—a job that is a credit to the man who put it on.

Are you protecting your reputation by using Blue-center Upson Board? It not only makes friends, but it holds them.

Send for a sample and test it yourself.

UPSON

PROCESSED

BOARD

Made by the
Fibre Board
Authorities

The Upson
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Lockport, N.Y.



THE DEPENDABLE BOARD WITH THE FAMOUS BLUE CENTER

What the Basement of a Home Should Be

[September, 1919]

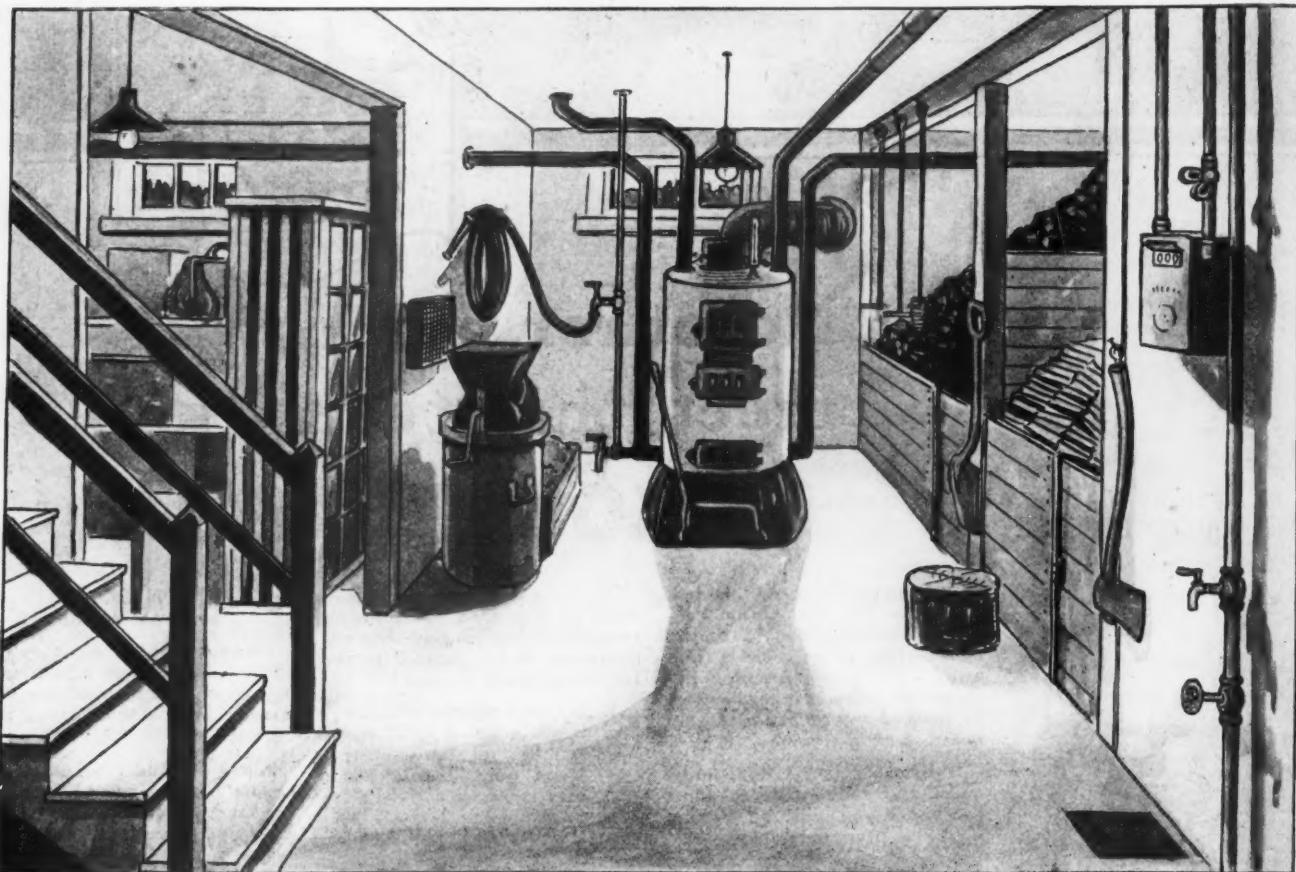
Planning the Basement

The first consideration in planning the basement is: Should the basement extend under the entire building? It is the consensus of opinion that it should. It is a necessity that you should extend foundation walls and footings deep enough into the ground, below frost line, to avoid the heaving of walls caused by the thawing and freezing earth and it will only require a foot or so more to provide a basement under the entire building. Why not have one? The cost will be very little more and the rooms above will be drier and healthier. There will also be the advantage of having plenty of storage space that is usually lacking

In homes of certain types such as bungalows, the owner sometimes does not desire a basement. In this event the underside of building should be well ventilated by having screened windows inserted in the foundation walls. This will insure proper ventilation and the preventing of dampness in the rooms above.

Building the Basement Walls

Many desirable materials can be used for building basement walls, such as concrete, concrete blocks, brick, hollow tile and stone. The latter should only be used in localities where it is cheap or found right on the ground, otherwise it is the most expensive of the materials.



How the Basement in a Modern Home Should Be Arranged. A Place for Everything Does Away with Confusion and Makes the Basement a Sanitary and Safe Place to Store Food and Fuel and Convenient to Take Care of the Heating Plant.

in too many homes and which will be an added feature should the owner wish to dispose of the home in the future.

The basement should have at least seven feet of head room in the clear, this will allow for sufficient clearance to give plenty of room for the heating pipes, etc., and will do away with the annoyance that one usually encounters in walking around a basement with a low ceiling, continually evading various objects.

The next point is, how much of the seven feet is to be below ground so as to allow for the proper lighting and ventilation. The windows should be at least one foot six inches or two feet in height and considering six inches for sill this will allow a depth of four feet, six inches to five feet below ground for the basement floor.

The interior of all basement walls should be finished smooth as this will insure a cleaner basement. What is more difficult to keep clean than the rough wall? Therefore, the additional cost one would spend here to make walls smooth will be repaid by having less cleaning to do.

Concrete walls for the exterior foundation walls of a building are perhaps the most satisfactory and give the best results if properly constructed and are the cheapest, especially when the gravel and sand are found on the job. The solid concrete walls will also be found to be vermin proof as there will be no mortar joints for them to dig their way thru and gradually gain access to the home.

Foundation posts can either be of brick piers, iron columns or wood posts, the latter being the cheapest

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Ambler Asbestos Shingles



Roof covered with Ambler Asbestos Shingles (Century Brand)—American method. Upper sidewalls covered with Ambler Asbestos Building Lumber—Half-timber effect.

Made in French, English and Honeycomb styles and in a large range of colors and sizes. Ambler Asbestos Shingles Century Brand are all

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And they never require paint or repairs.

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Ambler Asbestos Shingles (Century Brand)
Ambler Asbestos Building Lumber and
Ambler Asbestos Corrugated Roofing.

What the Basement of a Home Should Be

[September, 1919]

of all. Brick piers are good supports, but they take up considerable space in the basement. Concrete piers are very good and easily constructed.

Iron columns are the most satisfactory as they are small and rarely more than three or four inches in diameter. A good type of column is the three or four inch iron pipe filled with concrete and with the cast iron cap and base.

In building the foundation walls of the basement one of the most necessary things is to get the walls absolutely waterproof so that no dampness will get into the basement. To do this it is advisable to waterproof the exterior of the walls by using some well known brand of waterproof paint or compound and when properly applied it makes a water tight job. Sometimes in very wet localities the water turned aside by the waterproofed walls finds its way under the walls and comes up thru the basement floors.

Waterproofing Basement Walls

The basement floor can be made waterproof by laying a good mixture of concrete to the depth of three inches and on this concrete apply tar felt, such as is used for roofing, when this is mopped to the concrete work with waterproof compound it forms a waterproof skin. Upon this lay three or four inches of concrete with a finish of one-half inch top surface and finished smooth.

In moist climates where the basement walls are liable to sweat, owing to the warm air being carried thru the windows and deposited on the cool wall, the masonry walls and floor may be effectively insulated with sheet corkboard. It comes in pieces one by three feet, and one, two or three inches thick.

When the waterproofing as stated above has been applied to the floor, a layer of two inch cork is to be applied, well mopped with waterproof mixture on top

and upon this a concrete floor should be laid about two inches thick.

On the walls the two inch cork can be applied in cement mortar and finished off with two coats of cement mortar.

The walls and floors insulated in this way will be absolutely free from dampness or odors and just as healthy as the rooms above ground.

In the construction of every home the cost of basement walls, floors and excavation is automatically included, thereby creating useful space, which if a little more thought is given and with the expenditure of a small amount of money this part of the home can be made what it should be, to give a great deal more satisfaction and comfort.

The solution to this perplexing problem is to make sure of a proper arrangement of the basement when the plans are drawn, see to it that the ceiling has a height of at least seven feet in the clear, insist upon having the basement well lighted and ventilated. Have your furnace located as near the center as possible and arrange coal and wood bins so they will save you many steps and be large enough to hold the season's supply. Also see that coal and wood can be easily put in your cellar and that the ashes can be taken out. Arrange to have the meters, shut off cocks and traps conveniently placed, for when the home is once completed it will usually be found too late to make proper and efficient changes to the basement.

Have good tight partitions for protections against dust and a comfortable basement stairs constructed. All of which can be added without increasing the cost of the building if you will give a little more thought and common sense at the proper time and insist that these features are properly placed and constructed.



Hollow Building Tile Growing in Favor

Hollow building tile, in common with other structural products, decreased in quantity and value in 1918, but its decrease in value was smaller than the decrease in the value of any other structural materials except fancy brick and enameled brick, which are minor products, says the U. S. Geological Survey.

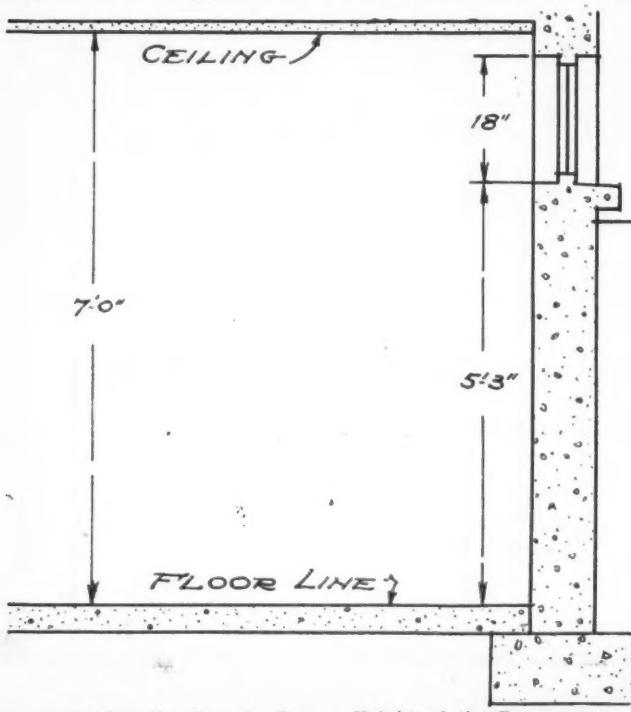
GROUND LINE The output in 1918 was 1,964,000 tons, valued at \$12,980,000, which, when compared with that in 1917, 2,590,028 tons, valued at \$13,255,433, shows a decrease of 626,000 tons, or 24 per cent, in quantity, and of \$275,000, or 2 per cent, in value. Hollow building tile was used by the Government in large quantities in 1918 and its greatly increased use in the future seems assured, as it is not only desirable material for use in partitions and floors in large buildings in a city, but for use in dwellings, barns, silos, and other buildings in the country.



His Exalted Position

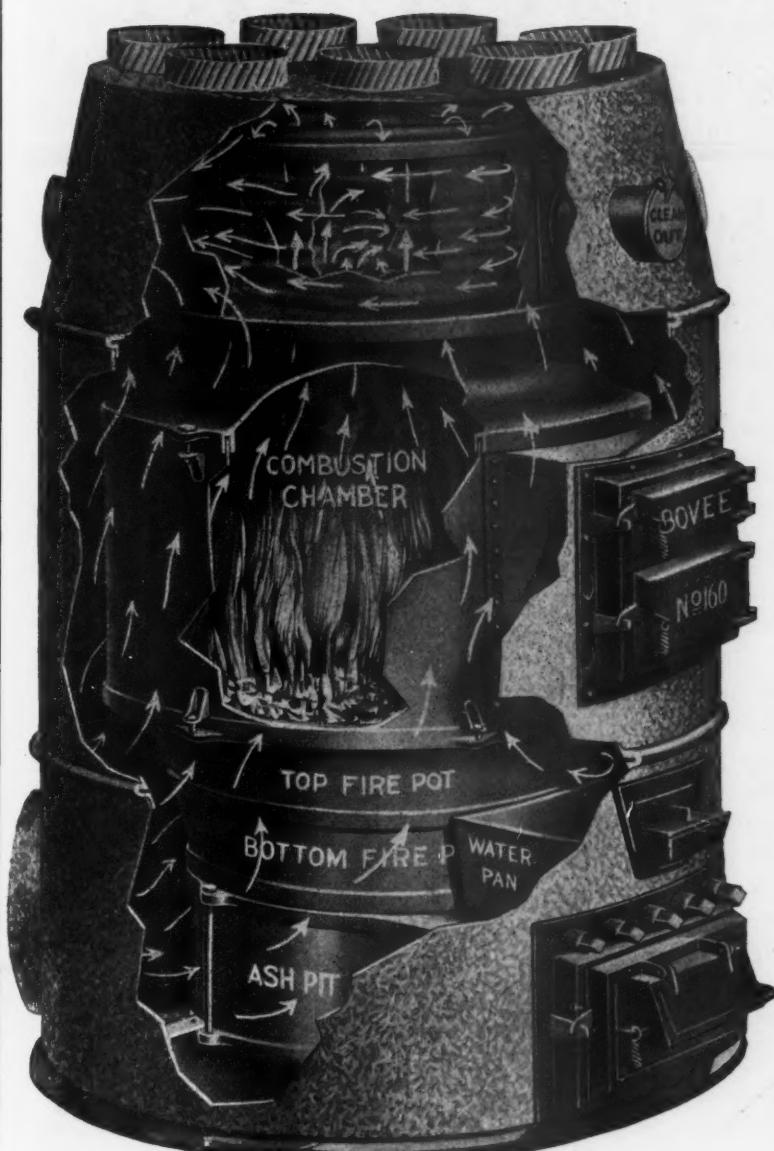
Stranger—"Does this man, Amos Darby, hold any place of distinction in the village?"

Villager—"Ye kin judge fer y'rself. When th' postman brings th' weekly newspaper down to Guy Parkinson's grocery store Amos is the first reader."—*Life*.



Section Showing the Proper Height of the Basement.

Bovee Compound Radiator Furnace



Bovee Compound Radiator Furnace

The Return Circulating Radiator, With Six Heating Surfaces

After the heat leaves this large combustion chamber it enters the return circulating radiator having six heating surfaces.

The Most Possible Heat From Fuel Consumed

The whole construction of the Bovee Compound Radiator Furnace is—First, to secure the utmost heat possible from the small consumption of fuel; and second, to secure great durability—both of which our twenty-five years of experience have proven to be exactly correct.

Careful Measurement Proves the Superiority of the Bovee Compound Radiator Furnace as Sure as Measurement Gives the Capacity of a Steam Engine

It is not that a furnace can be forced to heat a building, but necessary that it have sufficient capacity to economically heat it with very little care and attention, which can be determined only by actual measurement.

Send for Catalog and Special Prices

Bovee Furnace Works, 50 W. Eighth St., Waterloo, Ia.

Twenty-five Years on the Market. Sold at Manufacturer's Prices. Regular Piping to Each Room. Also Pipeless Furnaces

Twenty-five Years' Experience Enables Us to Make the Very Best

In our Bovee Compound Radiator Furnace we have, by twenty-five years' experience, been able to produce a hot air furnace having the greatest durability, and actually using much less fuel to produce the same amount of heat than other furnaces.

Look Right Into This Furnace

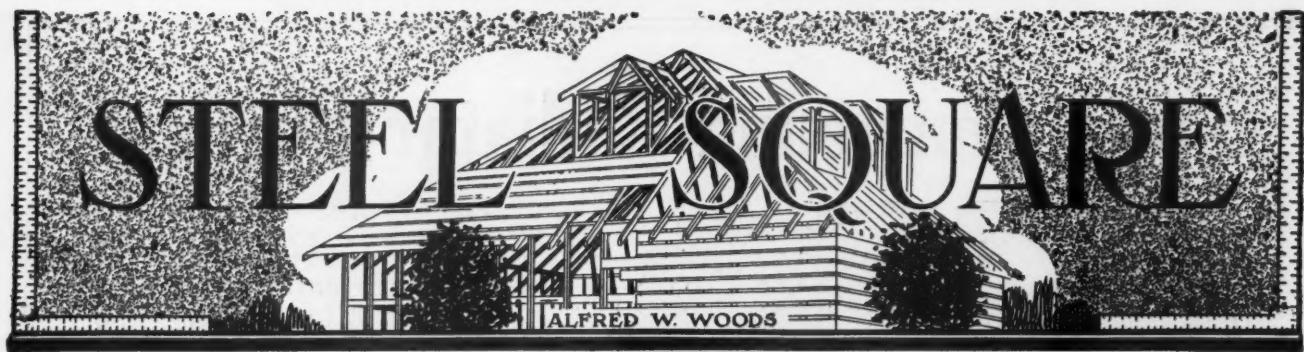
Note the large ash pit with a clean, independent shaking grate surface, with which it is very easy to keep the fire in a condition for perfect combustion of the fuel.

A Clean Heating Surface

From the top of the Ash pit clear to the Smoke Collar there is a clean heating surface, commencing with the heavy cast iron fire pots made in two sections, which is a splendid heating surface.

The Large Combustion Chamber Saves Forty Per Cent of the Fuel

The Combustion Chamber is about one foot larger than the fire pot, it is all a direct heating surface and always free from soot, and is more than twice as large in comparison to the fire pots of the combustion chamber of most other furnaces. As it is the fire pots that consume the fuel and the combustion chambers that radiate the heat, this large combustion chamber about doubles the heating capacity of the fuel used.



Problems of Roof Framing Solved

THIRD ARTICLE—THE USE OF THE STEEL SQUARE IN RELATION TO CIRCULAR MEASURE AS APPLIED TO MITERS, SIDE CUTS OF JACK RAFTERS, ETC.

By A. W. WOODS

WE come now to that part of our subject that tries the ingenuity of most carpenters—that of intelligently knowing how to apply the steel square to obtain the various cuts that enter into the roof.

The square, or right-angle, cornered building is universally used for all classes of buildings; and, while it is considered the easiest of all angles to frame, it is very misleading and has done more to throw the carpenter off his guard than anything else. This is simply because its fundamental rule is based on the 45-degree angle. Consequently, as the square corner is the same as the 90-degree angle, the reading is the same from either way. That is the reason that even amounts taken on the blade and tongue of the steel square give the miter for the square corner, either side of the square giving the angle, because it is at the half way or centralizing point between either plate. This is shown in Fig. 6. The miter for any angle may be obtained inside the quadrant of 90 degrees, and may be had by taking either of the two angles that

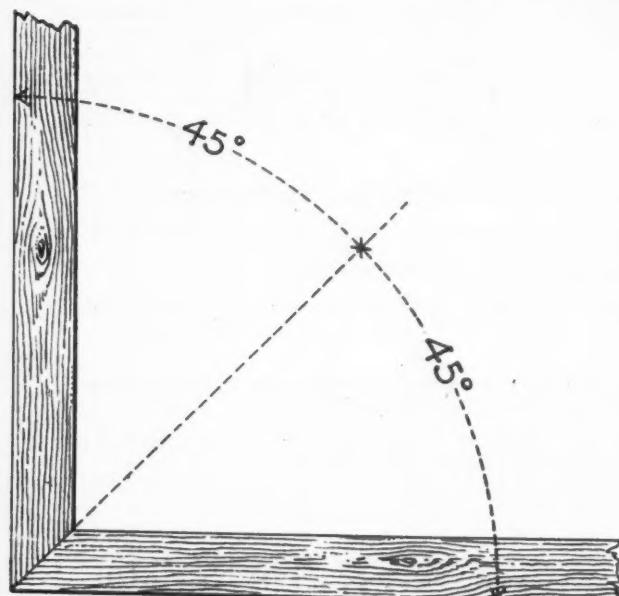


FIG. 6.

complete the quadrant; as, for instance, either 30 or 60 degrees gives the miter for the equilateral triangle, as shown in Fig. 7. The figures for the 60-degree angle, 12 and $20\frac{19}{24}$ give it, or 12 and $6\frac{11}{12}$, the figures for the 30-degree, give the same thing. The blade gives it in the former and the tongue in the latter.

What is true of this is true of any miter, but we will not enter into this phase of the subject further at

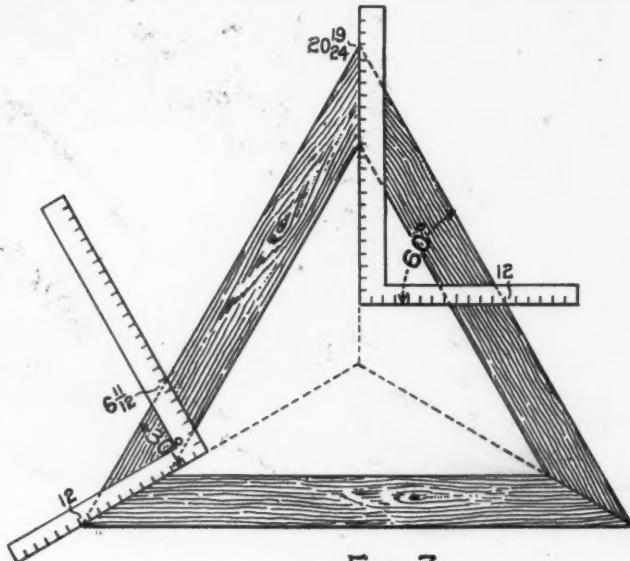


FIG. 7.

this time to explain the "whyfors," because it is a subject not readily grasped, and we would be accused of getting up in an aeroplane clear above the heads of our friends, when we could just as well stay nearer the earth; but these are facts just the same.

In the miter for the square corner the angles that form the quadrant are the same, namely, 45 degrees, and this is the reason why either side of the square gives the miter. They centralize; in other words, one angle does the business. Say, did you ever notice that one angle or set of figures taken on the steel square will give all the cuts for a one-half pitch for a square-cornered hopper, for either miter or butt joint? Take your square and try it. Take 12 on the tongue and 17



JAMES W. O'CONNOR
ARCHITECT
BERKSHIRE BUILDING
6 WEST 29TH STREET

NEW YORK May 16, 1919.

Messrs. Devoe & Rayblds.,
101 Fulton Street,
New York City.

Gentlemen:

In preparing the specifications for the residence of Mr. Harvey S. Ladd at Brookville, L.I., we specified the products made by your Company throughout. For the outside of the house, which is of wood construction, we specified your lead and zinc paint, known as "Outside White", and for the interior, specified your antique wood stain which we have found to be productive of excellent results, and it was used for the staining of the interior woodwork and in many cases for the furniture as well.

Yours very truly,
James W. O'Connor.

WJB-MG

William J. Baugel.

DEVOE

The oldest paint manufacturing concern in the
United States. Founded in New York in 1754

DEVOE & RAYNOLDS CO., INC.
NEW YORK—CHICAGO

on the blade and the cut will be found on the tongue for all the angles. This is simply because the $\frac{1}{2}$ -pitch is half way between horizontal and perpendicular and the miter is half way from either edge of the hopper. For any other pitch, the miters required partake of the angles formed each side of the pitch, but in the $\frac{1}{2}$ -pitch the angles are all the same; hence one set of figures taken on the steel square gives all of the cuts.

But we hear some one say, "What has all of this stuff he is giving us to do with the side cuts of rafters and roof framing in general?"

Just this: The same relation between the angles that govern the miter for the angle on which the hip rests partakes of the same parts or angles that we have above mentioned. Now, then, taking the side cut for the square-cornered building, it is generally understood that the run of the common rafter and its length taken to scale on the steel square will give the top, or more generally called, the side cut of the jack rafter, which is correct as far as the square corner is concerned, but it does not apply to anything else, because the run of the hip rests at an angle of 45 degrees from that of either common rafter or the plates. Hence the angles forming it are centralized just the same as for the hopper. Therefore, while the run in this case answers for one of the parts to take on the steel square, it is not because it is the run, but because it is equal to the part that should be taken for the general rule that answers for any angle of the corner on which the hip may rest.

What is the part then to take? It is this: Take the distance from the corner to the foot of the first common rafter and the length of the common rafter; the cut will be found on the side of the square that represents the length.

In Fig. 8, *A-B* represents the distance that the common rafter rests from the corner. Note, it also equals

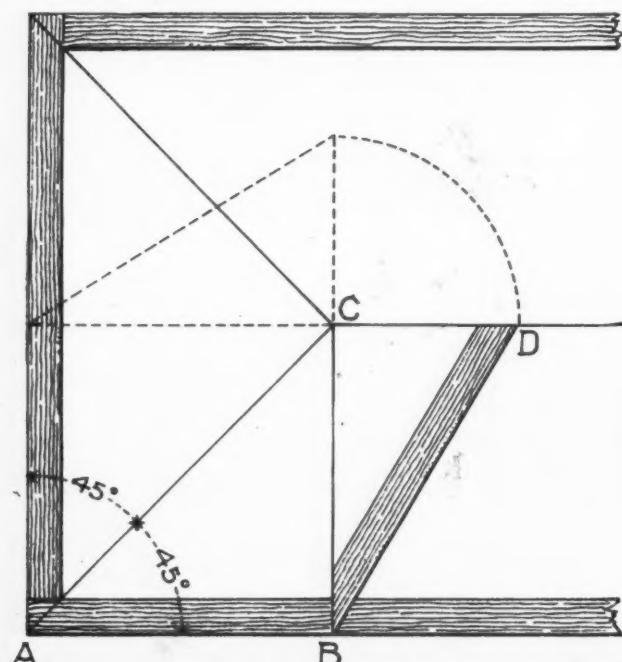


FIG. 8.

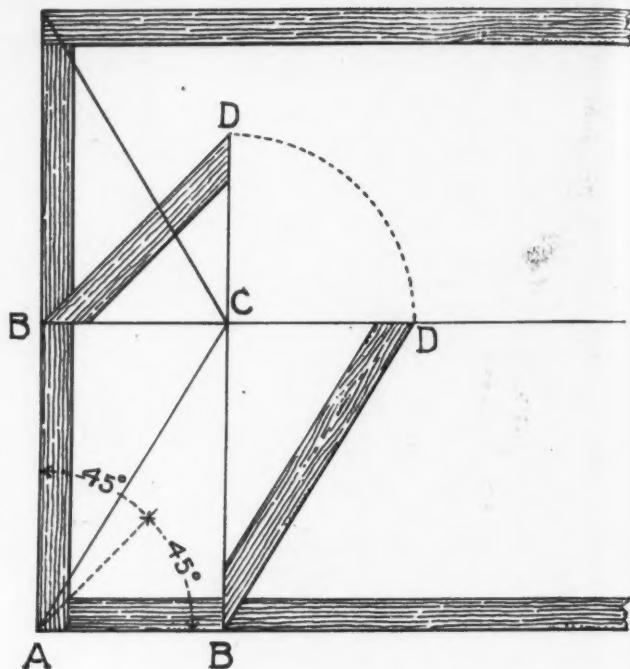


FIG. 9.

B-C, the run of the common rafter. Now, if there was no pitch at all to the common rafter, it would be lying down or level with the plate. Then *A-B* and *B-C* would give the cut to fit against the hip. Either side of the square would give the cut, which of course would be at 45 degrees. Now then, when a pitch is given the roof, instead of taking the run, then the length of the rafter for that run must be substituted. After the cut is made, should the peak end of the rafter be cut off and on a line parallel with the seat cut, it would be found that the angle in reference to the last cut mentioned would still be at 45 degrees, or just the same as when there was no pitch given the roof, tho it required a different angle on the square to obtain it on the back of the rafter.

This is a rule that applies to any cornered building or pitch. One side of the roof may be steeper than the other, as shown in Fig. 9, but it makes no difference, except that they must of course be treated separately. In this illustration like letters are used on both sides, and the operation is the same as that given for the preceding figure.



Added Life for Galvanized Iron

Many firms and individuals who use galvanized iron seem to believe that since it is galvanized, it is automatically proof against all forms of deterioration due to exposure to the elements. It is quite true that galvanized iron is one of the most durable materials of its weight and will stand quite a large amount of exposure before beginning to rust. However, continuous exposure to moisture will start the molecules of iron to rusting and when once thru the outer galvanized coat, the damage is done.

This could be avoided by the use of a galvanized iron primer. After a primer has been applied, a good rust inhibitive paint should be used. This gives life to the galvanized iron and also prevents the formation of rust which would occur if the iron were not painted.



Do You Build Your Own Scaffolds?

Contractors Who Make Every Detail Count For A Profit Don't

They can't afford to, lumber is too high. Wages are too high to let men waste days building wooden scaffolds.

Reliable Scaffold Brackets

are now in use by almost every reliable contractor. They are real economy, that is why contractors everywhere are choosing the better, cheaper way—Reliable scaffold brackets.

They are strong and safe, and when not in use can be folded, making them very compact.

You will find Reliable scaffold brackets to be the best and most profitable investment you ever made.

Write us for particulars, we want to tell you many more good things about Reliable Brackets.

Our catalogs will interest you and show you definitely why you cannot afford to build your own scaffolds.

Write us today.

**ELITE MANUFACTURING COMPANY
ASHLAND OHIO**

YOUR LABOR COSTS HAVE DOUBLED AND WORKMEN ARE SCARCE

The "Low Down" Continuous Concrete Mixer

Will cut your labor bills in half and triple your season's business.

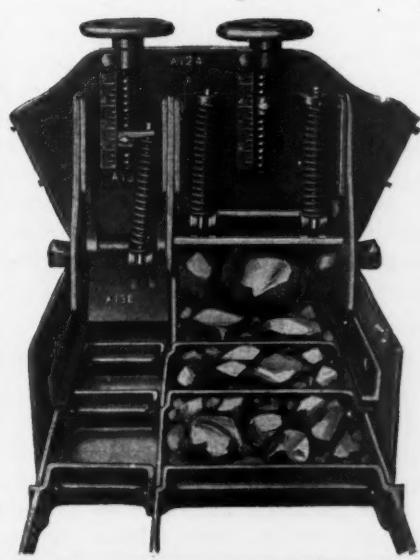
Mounted on trucks for outside work and equipped with 4 h. p. novo gasoline engine. Also mounted on skids equipped with tight and loose pulleys for attaching to line shafting in concrete block plants. Guarantees uniform finished concrete. No weak or lean spots in the finished job. Automatic measuring device-fool proof.

Build Up Your Reputation With a "Low Down"
Write for Our Catalog and Names of Satisfied Owners in your Vicinity.

ELITE MANUFACTURING CO.

Ashland

Ohio





NEWS OF THE FIELD

Goulds Co. Opens Detroit Office

The Goulds Manufacturing Co., of Seneca Falls, N. Y., manufacturer of "pumps for every service," will open, on Sept. 1, a district sales office in Detroit, Mich. This office will be located in the Dime Bank Building, and will be in charge of E. B. Gould, who has recently returned after eighteen months service in France.



Offers \$50 Prize for Brick House Design

The Permanent Buildings Society, Chicago, announces a prize competition for houses built of brick or brick over hollow building tile.

"If you have ever built a brick house or a house of brick and hollow tile, send us a picture of it, together with a pencil sketch of the floor plans," the company asks. Pictures 8 by 10 inches, and detail floor plans are preferred, but kodak pictures and pencil sketch of the floor plans are acceptable."

No pictures of houses costing more than \$6,500 will be considered and all pictures should have written on the back the date when the house was built.

The competition closes October 1. The photographs and floor plans should be sent to The Permanent Buildings Society, Chamber of Commerce Building, Chicago.



Changes in the Devoe & Raynolds Organization

The recent changes in the board of directors of the Devoe & Raynolds Co., Inc., has demonstrated that this company is bringing to the front the young men of the organization whose energy and initiative will do much to increase the prosperity of this long established business.

Clarence A. Campbell, who was recently elected a director and an assistant secretary, is director of sales with headquarters in Chicago. In 1893 Mr. Campbell entered the employ of Devoe & Raynolds Co., Inc., as an office boy, and during the next six years advanced step by step thru the sales division from a clerk in the house to special outside man. He was sent to Kansas City, in 1899 as secretary and manager for the Diamond Paint Company, organized to retail and wholesale Devoe products, and in 1904 when Devoe took over the Diamond Company, Mr. Campbell was made resident manager. Mr. Campbell's success in Kansas City was recognized by the company, and in 1918 he was promoted to director of sales with headquarters in Chicago.

Elliot S. Phillips, while a student at Yale, spent his summer vacations behind the paint counter in the Devoe store getting a knowledge of the business and took up active work with the company upon graduation. Mr. Phillips spent some time in the different plants of the company located in New York and Newark, and began his paint education from the foundation. He was later transferred to the sales department and when this country entered the war with Germany enlisted in the Navy, received a commission as ensign and became a pilot in the Naval Aviation Corps. After being released

from service, Mr. Phillips returned to the Devoe organization and became assistant to the president. He was recently elected a director of the company, and assistant secretary, with headquarters in New York.

In addition to these duties Mr. Phillips is in charge of the various branches of the company in its eastern division.



Spaulding Moss Co. Moves to New Factory

The Spaulding Moss Co., 32 Federal street, Boston, has removed from its place of business into a new building, where its factory and offices occupy three entire floors. The company handles and manufacturers drafting materials, blue printing outfits and architects' and engineers' instruments and supplies. Charles G. Bradford, who has traveled thru the eastern states for many years and is well known to members of the building industry, is the manager of the company. Coming into close personal contact with builders has given him keen insight into the needs of architects, builders and engineers.



Wire and Wire Products Companies Consolidate

The Clinton Wire Cloth Co., the Wright Wire Co., the Morgan Spring Co., and the National Manufacturing Co., have combined forces and co-ordinated their manufacturing plants under the name of the Clinton-Wright Wire Co., with administrative offices at Worcester, Mass. The products of the Clinton-Wright Wire Co. are wire, wire cloth, wire screen cloth, wire netting, wire rope, wire lath, wire springs, wire forms, special manufacturers' wire, wire goods, perforated metals, electrically welded fabrics, welded sheathing, wire fencing and ornamental wire and iron. The company's factories are at Worcester, Clinton and Palmer.



Oak Flooring Manufacturers' Association Adopts Trademark

The Oak Flooring Manufacturers' Association, with headquarters in the Ashland Block, Chicago, has adopted a trademark, which as soon as possible will appear on each piece of flooring the members of the association turn out. The trademark is shown in the accompanying illustration.

The association has sent out the following notice relative to the trademark:

"The trademark has been but recently adopted and not all the members have had time to apply the mark to their product. For the next few weeks, therefore, you cannot be certain that oak flooring, which is without this quality trademark, was not made by an association mill. Since members of this association make the vast majority of all the oak flooring made in this country, what you get will probably be of official standard quality, even without the association trademark."



Universal Announces New Light Unit

The Universal Products Co., of Sandusky, Ohio, announces the addition of a new unit to the Universal line of farm lighting plants. The new plant is smaller than any previously brought out by the Universal company, and has been specially designed to cover the particular necessities of the smaller farmers, truck gardeners, florists, summer homes, etc., where a larger service is not required.



When You Learn That Mr. Jones is Going to Build

What action do you take? Or when you find out that Doe and Smith intend to erect an apartment, or the City Council has approved plans for a new Public Building, or Lawyer Brown is going to remodel his home.

What move do you make to line up this business? Are you content to have your prospect shop around for recommendations on building material—or do you approach him with a definite proposition that makes him sit up and take notice? That's exactly what you can do when you get lined up properly with

KELLASTONE

IMPERISHABLE STUCCO

KELLASTONE is a dominating factor in building business. It affords talking points competition cannot meet, sales arguments which inspire the thinking builder, backed up by substantial evidence which clinches the job on the spot. KELLASTONE is a power in creating business and a tangible asset in holding it.

In KELLASTONE you have a real fulfillment of a perfect stucco, a scientifically balanced all-mineral composition which does not contain a particle of lime, gypsum or Portland cement. It's the original Magnesite stucco, absolutely fire-proof, immune to cold, heat, wear and weather, and it does not crack, crumble or turn dingy like ordinary stucco.

Permit us to explain the superior merits of KELLASTONE and ask us to tell you how we co-operate with you in your own home town

National Kellastone Company
1315 Mallers Building Chicago, Illinois

Officers of the company say that the demand for farm lighting and power equipment is literally growing by leaps and bounds and that while production capacity has been repeatedly increased the sales of Universal systems have more than kept pace with factory output. However, a similar condition exists with all the other leading concerns engaged in the manufacture of farm lighting plants, and the ever-growing market for such equipment is explained by the very evident fact that farmers everywhere are realizing the tremendous advantages to be derived from a modern electrical lighting and power plant, built especially to fit their individual needs.

Obviously no other energy can be so conveniently and economically adapted to farming use as electricit



How a County Got Behind a Truck Manufacturer

By R. R. SHUMAN

SULLIVAN COUNTY, INDIANA, that boasts of the biggest silo in the world, and of winning countless prizes for blooded live stock and superlative farm products, recently celebrated the opening of its greatest industry.

"Down by the railroad station" in Sullivan, the county seat, a new brick building stands, with a big sign announcing: "Mutual, America's Greatest Truck." And this building was recently the scene of a "christening" that has few parallels in American industry.

The whole town closed its doors for the afternoon—five prosperous banks and some fifty retail grocery, drug, hardware, shoe, clothing and other stores—every store in town—closed up tighter than on Sundays.

The local band, headed by a fat little drum major, struck up Hail Columbia, and the procession started in the "square" beside the picturesque old brick court house. Following it was the first "Mutual" truck ever built, chauffeured by its purchaser, a flour miller from across the line in Illinois, who had been hauling grain and flour with it for thirteen months thru all kinds of weather and over all kinds of country roads.

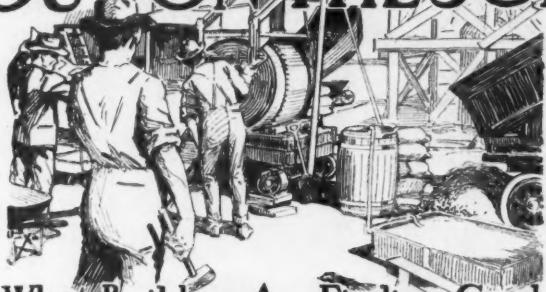
And following the truck were some 300 automobiles, those conveying officers and directors of the company in the lead, followed by the "orators of the day." The procession wound up at the truck factory, in which seats for 1,500 on the new cement floor were quickly occupied. A speaker's platform at one end was crowded with officers and directors of the company—and the speakers.

A prominent attorney—they called him "Judge"—presided. The town poet read an epic, entitled "Our New Enterprise"; a local banker told the story of the birth of the enterprise, and how Robert E. Petrie, its president and founder, had won the confidence of the whole citizenship of the county during two years of patient, earnest, business-like propaganda on behalf of his project; and how barriers had been battered down and pocket books finally opened up by this sincere, quiet young man, whose dream it was to make Sullivan County, Indiana, the home of "America's Greatest Truck."

Mr. Petrie told about the parts that were being run into the "Mutual" and how the Mutual Truck Company had a right to claim they were building "America's Greatest Truck" by reason of the fact that no other single truck in America contained more than a few of the super-specifications that formed the "Mutual."

The advertising man from Chicago told of the early struggles of other truck companies that were now employing many thousand workmen, and predicted a similar growth and success for Sullivan's infant industry.

OUT ON THE JOB



What Builders Are Finding Good

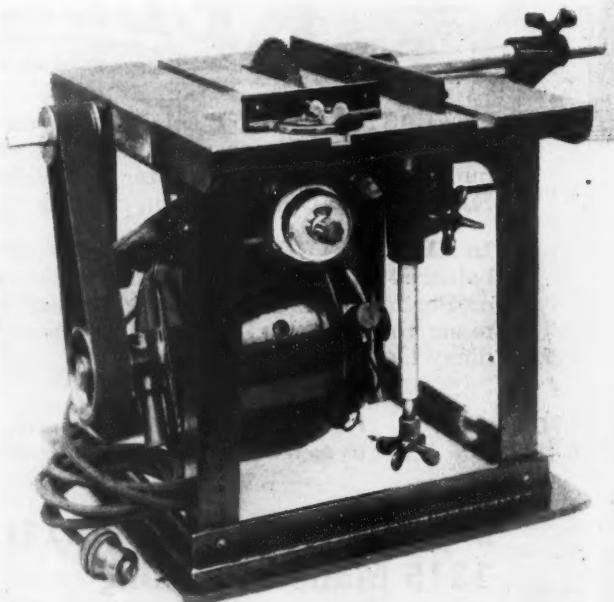
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A Small Motor-Driven Bench Saw

One of the handiest and most useful pieces of shop equipment is a motor-driven bench saw. Placed on the market a few years ago, these little saws have been installed in thousands of woodworking and carpenter shops and have been found most efficient for light work. And, being on the bench, they save the workmen many steps and much valuable time.

Illustrated here is one design of small bench saws. This saw is 12 inches high, the top is 12 by 16 inches, and it weighs only 75 pounds. The saw used is either 5 or 6 inches and is driven 3,000 revolutions per minute by the small electric motor shown set in the frame. The electricity for the motor is secured from the light circuit.

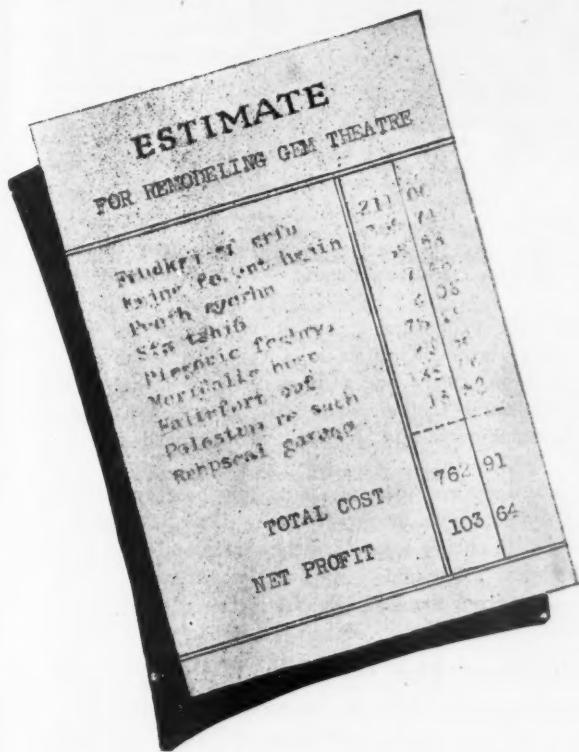
The guides on the top are easily and quickly adjusted and can be placed on either side of the saw. The cut-off guide is adjustable to any angle for mitre sawing. The lower part, or stand, is one casting, making it very rigid. The top is planed smooth and true and all parts are carefully fitted.



A Compact Little Bench Saw That Weighs Only 75 Pounds and Is Operated by a Motor, Set in the Frame. The Current Is Secured from a Light Socket.

BLACK ROCK BLACK CENTER WALLBOARD

Builds Profit Columns



Build for immediate wallboard profit, but keep an eye open for "futures". Of course, you'll use the kind that stands the test of time and weather. But be discriminating, too, and choose a distinctive looking board with distinctive advantages.

Black Rock Wallboard qualifies. It meets the highest of standards, it is distinctive, it gives the kind of satisfaction that brings repeat business.

For new work, or remodeling, in houses, theatres, stores, for partitions most any place Black Rock can be used with profit.

The free Black Rock plan service is at your disposal. Full information includes decorative suggestions, color effects, etc., in practical form for any type of work.

Let us give you the name of the Black Rock Wallboard dealer near you.

THE BLACK ROCK WALLBOARD COMPANY
71 Ontario Street

Buffalo, N. Y.

Dealers—Write for details of our exclusive sales plan.



making it a durable and accurate machine. A quick-acting, top-elevating device allows the top to be raised or lowered for any position, thereby varying the depth of the saw cut when grooving, undercutting, etc. The motor is fully protected by mounting it on the under side of a specially constructed dust chute.

Little electrically driven machines are economical machines to have installed in the shop. They save time and money and do excellently the work of which they are capable.



Patented Plastic Stucco Material

A satisfactory exterior of stucco depends, as does every other exterior, upon good materials and good workmanship. Good jobs cannot be turned out with poor materials no matter how good the workmanship, and poor workmen, like poor cooks, can spoil the best materials. One depends on the other.

Since stucco first came into the building field the demand for stuccoed exteriors has grown remarkably. Experience has taught builders the right way to mix and apply it and the materials have been improved, so that now buildings coated with it are most popular.

There are two kinds of stucco; one a cement plaster and the other magnesite stucco. Manufacturers of the latter put forth many claims for it, which are substantiated by architects and builders who have used it. They are: that it is totally impervious to water; that it is a non-conductor of electricity; that it actually has the strength to support a building; that it is flexible so that the natural settlement of the building will not crack it; that it is fire-proof and that when thoroly dry it is as hard as concrete.

This stucco has a stone filler. It is mixed and applied about one-half inch thick over any of the accepted foundations, including brick, hollow tile, the patented stucco boards, and wood and metal lath. It is not granular when plastic, but has more the consistency of putty and is, therefore, easy to handle and spread and does not sag.

The accompanying illustration shows a house that was constructed about four years ago. The stucco was applied when the temperature was 16 degrees below zero, but after four years shows no cracks or other imperfections. While it is not good practice to apply stucco in the temperature named, the fact that this was put on while the thermometer



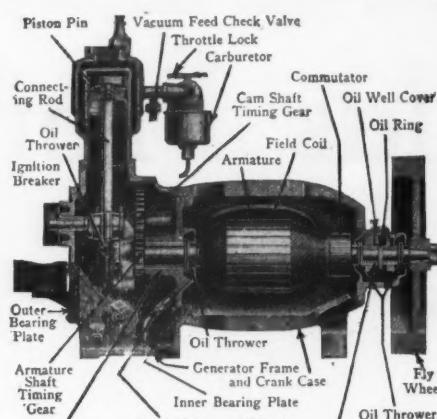
The Stucco on This Home Was Applied When the Temperature Was 16 Degrees Below Zero and After Four Years Shows No Cracks and Is in Perfect Condition. The Home Is Owned by Charles Petry, Marshall, Mo. F. H. Kneisley, of Marshall, Was the Architect.

registered such intense cold can be taken as proof that what is claimed for it is true.



Has New, Low Price Lighting Plant

At the present time, the demand for lighting plants is like the demand for automobiles—there are more orders than there are plants to go around. A few years from now conditions may not be the same. A well-known manufacturer recently came into control of patents on a lighting plant design



A New 15-Light Individual Electric Light Plant, Showing Its Strong Points.

wherein the housing of the generator is integral with the crank case of the engine.

This means that one single casting suffices for the armature, housing, and the engine base and crank case. The illustration makes this clear. There are only three main castings, the flywheel, the cylinder head and the rest of the plant. This latter

large casting is so designed that it is adapted to manufacture in very large quantities at a very low expense. At the present time, the concern is making a 15-light plant in this design and further sizes will be added as special equipment, machinery and manufacturing space are provided.

Agents are very enthusiastic about this new type, as its compactness meets with universal favor. This 15-light plant as shown is 22½ inches long, 12 inches wide and 18½ inches high, and weighs 165 pounds. An order was received for five of these plants from the Fiji Islands.



Over the Garden Wall?

"She asked me to meet her by the garden wall."

"Yet you seem apprehensive."

"Yes; I'm afraid she intends to throw me over!"—London Tit-Bits.



A Long "Wait"

"What is the most difficult motion picture you ever took?"

"Man catching a fair sized fish. We waited hours for a bite and snapped scores of minnows before he finally hooked something that would pass."—Kansas City Journal.



IT is the adoption of another fellow's good building method that makes a builder proficient in his profession. The combined discoveries of builders has brought construction work to its present high plane. The Correspondence Department is the place to get and give these ideas.



EVERY dollar a contractor saves by efficient methods and equipment means an extra dollar of profit. Waste comes out of the profits. That's a good thing to remember.



Make 10% More Profit on Every Labor Contract



CURTIS Woodwork will save you time and labor on the job. It will enable you to build more homes every year, for it will save you from 6 to 10 days' time on every home you build. This has been the experience of other labor contractors, and here are a few reasons why:

Windows

Every sash bearing the **CURTIS** trade-mark is made of white pine. The bore and slot for the sash cord are clean cut; the bore is deep enough for the knot in the cord, and the double-groove is wide enough to slide over the pulley. The tenon of the cross-rail is mortised out flush with the groove for the sash cord. You have practically nothing to do on **CURTIS** sash after they reach the job but to fit them and hang them in the frame.

White Pine Doors

White pine doors that won't warp are getting scarcer and scarcer as white pine becomes less and less abundant. This mark — **CURTIS** — appearing on any door of solid construction is your guarantee that the door is of genuine California white pine. It is as warp-proof as any wooden door



can be, and is easy to hang. It will always give satisfactory results, thus maintaining your reputation as a builder of better homes.

CURTIS Standard Trim

CURTIS Standard Trim is sanded at the factory by belt and drum sanders and is practically ready for the finishers with a minimum of preparatory work when it reaches the job. The trim is shipped cut-to-lengths, fitting only being required on the job. Think of the waste in material this saves, and it helps to insure your getting the right pieces for the right places.

Talk to your lumber dealer and arrange to co-operate with him so that you can benefit by the savings in labor and reductions in cost which the use of **CURTIS** Woodwork makes possible.

CURTIS SERVICE BUREAU
2040-3040 S. Second Street, Clinton, Iowa

*Manufacturing and Distributing
Plants at*

Oklahoma City, Okla. Detroit Lincoln, Neb. Chicago
Sioux City, Iowa Wausau, Wis. Topeka, Kan. Minneapolis
Clinton, Iowa Dayton, Ohio

EASTERN OFFICES AT PITTSBURGH AND WASHINGTON

The makers of **CURTIS** Woodwork
guarantee complete satisfaction to its users

"We're not satisfied unless you are"

1866 **CURTIS** WOODWORK

"The Permanent Furniture for Your Home"



Lesson in Plan Reading FREE!

Send now for this FREE lesson which we will send to prove how quickly you can learn Plan Reading by our new, easy method. Not a penny to pay for this lesson. Just ask for it. Without a good knowledge of plans your opportunities are limited. At work you don't get the chance to study blue prints or to have their meaning explained. We make the chance for you. We place in your hands plans used on actual construction by contractors in Chicago and other cities, and you get lessons by men in charge of building work who will help you at every step and make you an expert plan reader.

Builders' Course On Easy Payments

Our Builders' Course gets right down to the things you need to know. And you can get it on easy payments. A small first payment when you enroll—then payments monthly—so small you will never feel the cost. At least write and find out what this course really offers and how you can make more money by learning what we will teach you in a short time.

Learn By Mail

Use your spare time at home to learn how to be a better workman, a better foreman or a better contractor. Even after you complete the course you have the privilege of consulting us when you want suggestions. We will always be ready to help you.

Some Things We Teach

Plan Reading Use and meaning of all the 'ines. Plans and elevations. Reading dimensions. Detail drawings. Laying out work from plans. Practice in reading plans from basement to roof, etc., etc.

Construction Brick work, stone work, carpentry, plans and specifications. Every detail explained for residences, office buildings, factory buildings, school houses, apartment buildings, bank buildings, etc., etc.

Estimating Figures on every kind of building work fully explained. Labor and material. Problems worked out from plans. Practical builders' methods studied from plans and specifications of actual buildings of every kind.

Arithmetic A complete course arranged especially for builders and contractors.

Architectural Drafting Also other branches of drafting. Send for special catalog on these courses.

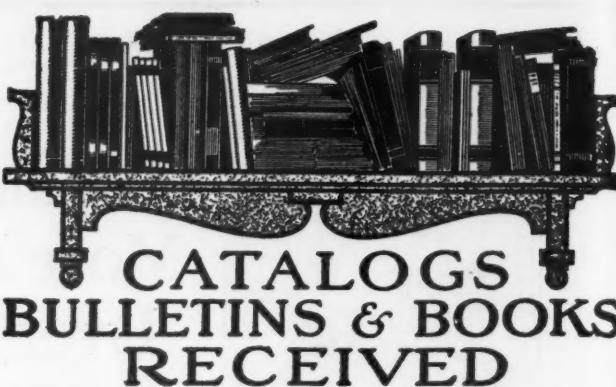
Send the Coupon

Get this information now. Learn how to make more out of your work or out of your business by knowing more about it. All this information is free. Send for Free Lesson and this information—now. Just send request on the coupon below.

Chicago Technical College

936 Chicago "Tech" Building Chicago, Illinois
Without obligation on my part, send me the Free Lesson in Plan Reading, also information on your Builders' Course in Plan Reading, Estimating, etc.

Name _____
Street _____
City _____ State _____
Present Occupation _____



The following literature, dealing with subjects of interest to builders is now being distributed.

"Truscon Steel Windows" is the title of an 80-page and cover booklet, issued by the Truscon Steel Co., Youngstown, O. The booklet contains descriptions of the steel windows the company manufactures and contains much valuable information on their construction and how to install them. Many illustrations are used to visualize the text.

Own Your Home Campaign Literature, consisting of a poster in four colors, newspaper advertisements and stickers, has been prepared by the Own Your Home Campaign Committee, of St. Paul, Minn. The literature has proven very effective, and committees in other cities are invited to make use of it.

"Hay Tools and Door Hangers" is the title of catalog No. HT54, issued by F. E. Myers & Bro., Ashland, Ohio. The catalog is a comprehensive list of barn and garage equipment, and is well illustrated. It contains 122 pages and cover. Hay slings, carriers, carrier tracks and sliding and swinging doors are shown.

"Road Builders' Equipment" is the subject of an exceptionally well illustrated folder, issued by the Novo Engine Co., Lansing, Mich. The folder shows and describes the various pumping outfits that the Novo company manufactures.

Designs for Community Centers, submitted in the prize design contest of the White Pine Bureau, are shown in the current issue of the White Pine Series of Architectural Monographs, published by the White Pine Bureau, St. Paul, Minn. Ten fine designs are shown. The Monograph also gives the report of the jury of awards, and contains 24 pages and cover.

"The Hollow Wall Way" is the title of a folder showing the metal forms and concrete mixers manufactured by the Universal Cement Mold Co., Milwaukee, Wis. The forms are used to make hollow concrete walls on the job.

"Three Men in a Motor Truck" is the title of a story of a trip made just before the war ended by a motor truck load of new model shells from the Kohler Co., Kohler, Wis., to the government proving grounds at Aberdeen, Md. The 16-page story is interesting, in that it shows the part the Kohler Co. played in supplying the government with munitions.

How to bleach shingles to simulate age is told in a little four-page and cover booklet, issued by Samuel Cabot, Inc., Boston, Mass. The "silver-gray" effect that is so greatly admired on the shingles of old New England homes can be secured in a short time, the booklet claims, by the use of the creosote bleaching oil the company makes.

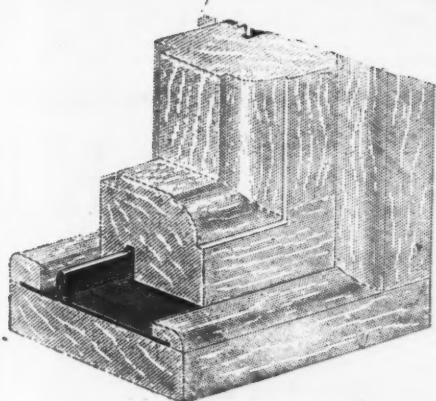
"Waterproofing Problems" is the title of a four-page folder issued by the General Fireproofing Co., Youngstown, Ohio. The text tells how several different kinds

"Now I Know Why We Cannot Keep Warm"



THERE is no need of suffering from the cold. Your home can be made comfortable in the coldest weather. ANGELL Metal Weather Strips can be installed by a contractor, at every window and door, so as to keep out cold and dust, stop rattling windows, make windows slide easily—and all of this with a coal saving of twenty to thirty per cent.

ANGELL WEATHER STRIPS



Most Practical—Last Forever

Angell Weather Strips are made in time-tried designs which have proven for years that they are the most practical, and will last as long as the building stands. There is a design for every kind of window—double hung, casement, pivot, single and double doors, garage doors, metal sash. There is nothing to wear out, and once installed will last as long as the building stands.

Every Building a Prospect

It does not make any difference how well fitted the doors and windows are, the wood shrinks and leaves an opening through which the wind blows. There is a demand in every home, no matter how large or small, for weather strips.

Write for our samples and prices. The ANGELL Weather Strip is the most complete of any on the market—the prices are right and shipments are made promptly. The time spent this fall handling ANGELL Weather Strip will be profitable. Exclusive agencies granted.

Write for Our Proposition Today

GEORGE ANGELL COMPANY
400 Penobscot Building Detroit, Michigan

of concrete work was made waterproof and illustrations show the structures. The folder also contains an invitation to contractors to put waterproofing problems up to the company.

"Acme Allmetal Screens" is the title of a 24-page and cover booklet on window and door screens, issued by the Acme Metal Screen Co., Chicago. The booklet is well illustrated, showing how the frames are constructed.

Automatic high speed concrete block and brick making machines are described and illustrated in catalog No. 6, issued by the Kramer Automatic Tamper Co., Peoria Heights, Ill. The booklet contains 32 pages and cover and describes the machines the company makes. There are a number of illustrations.

"Flexotile Stucco Wainscoting" is the title of a 40-page and cover booklet, issued by the Flexotile Floor Co., Rockford, Ill. The booklet contains a number of illustrations showing homes and other buildings where the plastic stucco this company makes has been used.

"Markets for Cement Products—A Business Opportunity for You" is the title of a 24-page booklet, issued by the Portland Cement Association, Chicago. It is devoted to an exposition of the profit-making possibilities of making various concrete specialties, such as fence posts, tile and farm structural materials.

"Magnestone Products" is the title of an exceptionally artistic booklet, issued by the Magnestone Co., Springfield, Ill. The booklet is illustrated with color plates and halftones. One interesting feature is a description of Magnestone and how it is quarried and manufactured. The booklet contains 24 pages and double cover.

"Butler Furnaces" is the title of a 6-page folder issued by the F. B. Zieg Co., Fredericktown, Ohio. It describes

the Butler pipeless furnace and shows the structural details, which are out of the ordinary.

"Home—The Thing That Makes It Worth While" is a folder issued by the Globe Stove and Range Co., Kokomo, Ind. The folder contains some interesting information about pipeless furnaces, including "Construction Facts You Should Know," and is illustrated with cuts showing the furnaces this company makes.

All about metal weatherstrips describes the numerous folders and booklets on this subject issued by the Diamond Metal Weather Strip Co., Columbus, Ohio. The literature is valuable to contractors and will be a great help in securing weather strip jobs and installing weather strips.

"Rex Products" is a 112-page and cover booklet, describing Flintkote roofings and shingles, manufactured by the Flintkote Manufacturing Co., Boston, Mass. Accompanying this large booklet are several other booklets and circulars describing the company's products. Together these booklets are most valuable to dealers in roofings and contractors who put them on.

The Waterbury Seamless Pipeless Furnace and its strong features are described by text and illustrations in

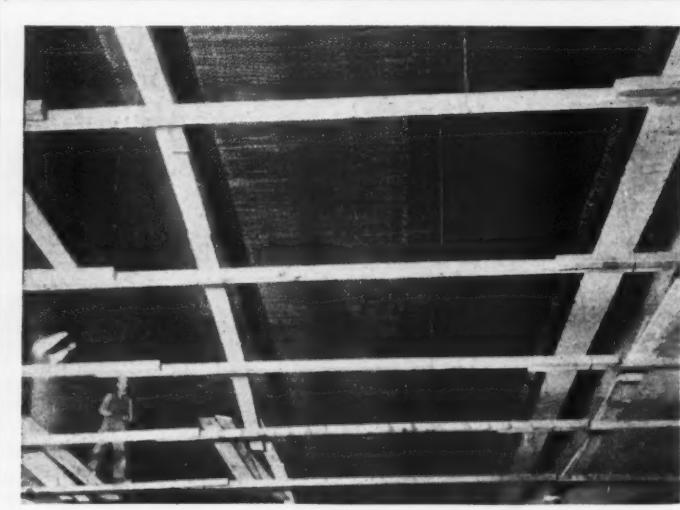
HERE'S WHAT YOU NEED

The American Combined
Level and Grade Finder
With Compass

For Contractors, Carpenters,
Masons, Bricklayers,
Surveyors, etc.

It is simple, accurate, easily
understood. Shows its true
sight on any line or grade in degrees, inches and percentages. Write at once
to Agency, has over 300 testimonials, booklet, and introducing prices.

American Combined Level & Grade Finder Co.
EDWARD HELB, Prop.
Box 255 Railroad, Pa.



Metal Lath Week

October 6th to 11th

Co-operate with the National Fire Protection Association and help Fire Prevention Week, October 6th to 11th. For this purpose the Metal Lath Man-

ufacturer's Association will conduct Metal Lath Week, October 6th to 11th, to help center public attention on Fire Prevention.

Your influence is needed. Urge the construction of fire-safe homes and public buildings. Write us for pamphlets and data.

THE BOSTWICK STEEL LATH CO., Niles, Ohio

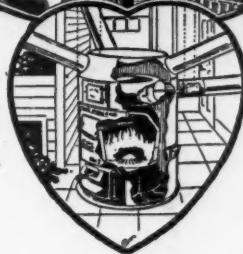


HOLLAND - SERVICE



The HOLLAND
COMPLETE
SYSTEM

THE HEART
OF THE
HOME



WE employ the best heating engineers in the country. They know just what type of heating plant is best suited to fill your particular needs.

The Holland Engineers have already satisfied over 100,000 customers—enough to prove the absolute reliability of their judgment, surely.

When you send your plans to us, they receive careful study. The attention of our engineers eliminates unnecessary labor and mistakes.

HOLLAND FURNACES MAKE WARM FRIENDS

Contractors who install Holland Furnaces are assured of their customer's esteem and gratitude—they offer your customers perfect satisfaction. Holland design and construction offer many advantages that cannot be found in other heating plants.

The Holland is built without bolts, and has fewer joints than any other furnace. It has the famous cone center rocking grate, which rests on a center pivot—the easiest grate in the world to operate. You can shake it with one finger.

Holland construction compels 100% heat radiation—the grate throws the fuel to the outer walls of the firepot, where it burns from the sides and over the top. All soots and acid gases are burned, getting the most heat possible from the fuel.

Write for our special proposition to Contractors—it is the most desirable you will find anywhere.

THE HOLLAND FURNACE COMPANY

Two Factories

World's Largest Installers of Furnaces
HOLLAND, MICHIGAN

200 Branches

a 16-page booklet, issued by the Waterman-Waterbury Co., Minneapolis, Minn. How and why a pipeless furnace warms a home is one interesting feature of this booklet.

"Modern Oak Floors—Good for a Hundred Years" is the title of an artistic book on oak floors issued by the Oak Flooring Manufacturers Association, Chicago. The booklet contains 24 pages and cover and is well illustrated. One feature is two pages showing oak floors in their natural colors.

"The Stewart Monogram" is the name of an eight-page house organ, issued "every little while" by the Stewart Manufacturing Co., Waterloo, Iowa, makers of Stewart concrete mixers. The current issue, number 4, of volume 2, contains some interesting facts about concrete construction and is well illustrated.

"The Practical Test—A Little Treatise on the Pierce Downdraft Boiler" is a 32-page and cover booklet, issued by Pierce, Butler & Pierce Manufacturing Corporation, New York. The booklet contains descriptions of the steam and hot water boilers the company makes and has numerous fine illustrations, some of them in color.

"Latches for Garage and Barn Doors" is the subject of a folder, just issued by the National Manufacturing Co., Sterling, Ill. Illustrations showing how the catches are attached to the door and demonstrating their efficiency accompany the descriptive text.

"Distinctive Homes of Red Cedar Shingles" is the title of a 24-page and cover booklet of home designs, issued by the Shingle Branch of the West Coast Lumberman's Association, Seattle, Wash. The illustrations show a number of good homes with shingle siding and roofs and several of them are accompanied by floor plans.

The Backus gas log open fire place steam heater is de-

scribed and illustrated in a 20-page and cover booklet, issued by the Backus Heater & Foundry Co., Boston, Mass. The booklet shows a number of designs of the heater, which appears to be a gas log, but contains a small steam heating plant.

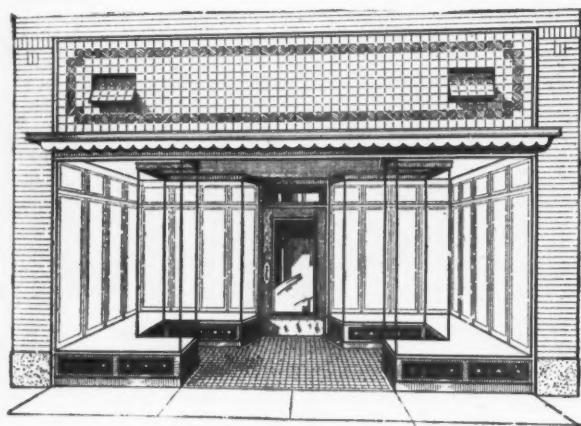
Steel saws, knives and files of all descriptions are shown in the new catalog issued by the Simonds Manufacturing Co., Fitchburg, Mass. The catalog contains 196 pages and cover and is an extremely comprehensive list of various designs of saws, hand and power, knives, files and other tools this company manufactures.

How to operate and repair Novo engines is told by text and drawings in an instruction book and repair list issued by the Novo Engine Co., Lansing, Mich. The booklet contains 32 pages and cover and is a valuable book for owners and operators of the engines the Novo company makes.

"The Reasons for the Higgin Metal Insert Strip" is the title of a 12-page and cover booklet, issued by the Higgin Manufacturing Co., Newport, Ky., maker of metal weather strips. The booklet tells about tests made of windows without and with weatherstrips and contains some good information for builders to use when selling weather-strip jobs.

Details showing how casement window hardware is installed are contained in a folder issued by the Monarch Metal Weather Strip Co., St. Louis, makers of "Control-lock" casement window operators. This company also is sending out instructive literature on metal weather strips.

Metal Frame fly screens and metal weather strips made by the W. J. Baker Co., Newport, Ky., are described by text and illustration in a 74-page and cover booklet the



Why not investigate this profitable business? Any contractor who can build a house or a store building can make money installing Kawneer Store Fronts. Fill out the coupon at once and make a start on this profitable business.

Send for New Book of Designs Every builder should have a copy of this valuable book for his files.

Kawneer Manufacturing Co.

1526 Front Street, NILES, MICH.

SEND IN THIS COUPON TODAY

Kawneer Mfg. Co.
1526 Front St.
Niles, Mich.
Please send me your
new Book of Designs.

Name
Address

We'll Help You Make \$5000 a Year

We will become your backer—we will co-operate with you to help you in making this money. And you ought to be able to make even more—as much as \$10,000 a year.

Business Waiting for You

Every stove heated house in your neighborhood is a prospect—is just waiting to be shown the advantages of Hero Pipeless heating. If YOU show them YOU make the sale—and you don't need to be an experienced heating man—nor an experienced salesman—our co-operative working plan helps you and shows you the way to get the business.

With labor getting such big wages the average contractor can make far more money with less worry—no chance for loss—no chance to make a mistake in estimate—if his business is selling and installing the

HERO PIPELESS FURNACE

The Leader In Sales, Satisfaction, Service

The Hero Pipeless Furnace is the easiest furnace to sell because of its many exclusive advantages. It quickly takes precedence over every other make in any territory where it is introduced.

The Hero Pipeless Furnace is the result of 30 years' furnace experience. The old established reputation of this company stands back of our guarantee of satisfaction.

And we can supply you with the most economical and most efficient pipe furnaces if you have trade for them.

**HERO FURNACE CO.
59 W. Lake Street**

CHICAGO

The Hero Pipeless Furnace is so priced that you easily meet competition and make a good profit. Our sales plan is so completely worked out and so practically helpful in its operation that you will immediately benefit by it. If you want a good paying business of your own—write today for the Hero Exclusive territory proposition.

Name
Address

Please send me details of your
co-operative sales proposition
on Hero Pipeless Furnaces.

company issues. The booklet also contains descriptions of metal garages and houses the company manufactures.

Fixtures, stall floors and weather strips for barn doors are shown in a 16-page and cover booklet, issued by the Schouler Cement Construction Co., Newark, N. J. The products of the company are fully described by text and illustration.

Blue print detail of weather strip installation is an instructive piece of advertising literature for carpenters and builders, issued by the Diamond Metal Weather Strip Co., Columbus, O. The company also puts out a number of interesting folders and booklets of value to contractors on metal weather stripping.

"**The Jones Registers**" is the title of "Complete Catalog No. 18" issued by the United States Register Co., Battle Creek, Mich. The catalog, which contains 76 pages and cover, contains descriptions of the various types of registers and other heating plant accessories the company makes.

"**The Big Importance of Little Things**" is the title of a 16-page and cover booklet, issued by the Allmetal Weather Strip Co., Chicago. The booklet contains detail showing how this metal weather strip is installed. "Protect Your Home" is the title of another interesting piece of metal strip literature this company puts out.

"**The Clothel Refrigerating Unit for High Class Residences**" is a four-page circular in colors, issued by the Clothel Co., New York City, manufacturer of electrically operated iceless refrigerators. The title of the circular describes the refrigerators this company makes.

Air compression tanks for automobile garages, operated by Novo gas engines, are described and illustrated in a four-page circular issued by the Kellogg Manufacturing Co., Rochester, N. Y. This equipment is installed in

many high-class garages, as it provides "free air" for the owner's auto tires.

"**Casco Waterproof Glue**" is the title of a 20-page and cover booklet, issued by the Casein Manufacturing Co., New York City. The booklet not only describes the glue this company makes and machines for mixing it, but contains valuable data on lumber and plywood construction.

Building ventilators with "V" shaped sides are described in booklet No. 6, issued by the Auto Utilities Manufacturing Co., Chicago, manufacturer of Peerless ventilators. Detail drawings showing the construction of the ventilators and pictures of many buildings where they are installed illustrate the booklet, which contains 16 pages and cover.

Safety devices for various types of woodworking machines are shown and described in a series of folders, issued by the Surety Guard Co., Chicago. Guards for saws, drills and planer knives are made by this company.

"**Assemblies of Irons for Vehicle Bodies**" is the title of a 60-page and cover booklet issued by the Eberhard Manufacturing Co., Cleveland. The booklet describes the irons used in the construction of commercial bodies for automobiles. The company also issues a 218-page catalog of malleable iron for automobile, carriage and wagon bodies.

"**Pullman Ventilators**" and "**Pullman Ventilator Cowl**" are the titles of two booklets issued by the Pullman Ventilator and Manufacturing Co., York, Pa. The former booklet contains 60 pages describing window ventilators and the latter 20 pages describing the roof ventilators the company makes.

Construction details for the installation of ceiling beds are contained in a four-page folder, issued by the Sor-



Stained with Cabot's Creosote Stain
C. M. Hart, Architect, Bay Shore, N. Y.

Stained Shingles

*The Warmest, Most Artistic and Most Economical
of all House Finishes*

Wood shingles are two or three times warmer than the gummed paper substitutes, and they are cheaper, last longer and are incomparably more artistic and attractive. When stained with the soft, moss-greens, bungalow-browns, tile-reds and silver-grays of

Cabot's Creosote Stains

they have a richness and beauty of tone that no other finish can equal and the creosote thoroughly preserves the wood. Use them also on siding, boards, sheds and fences. Anyone can apply them with best results at least expense.

Cabot's "Quilt"

makes floors and partitions sound-proof by breaking up the sound-waves and absorbing them. It makes walls and roof cold- and heat-proof by a cushion of minute dead air spaces that prevents the conduction of heat. From 28 to 50 times as efficient as cheap building paper.

You can get Cabot goods all over the country
Write for samples and name of nearest agent.

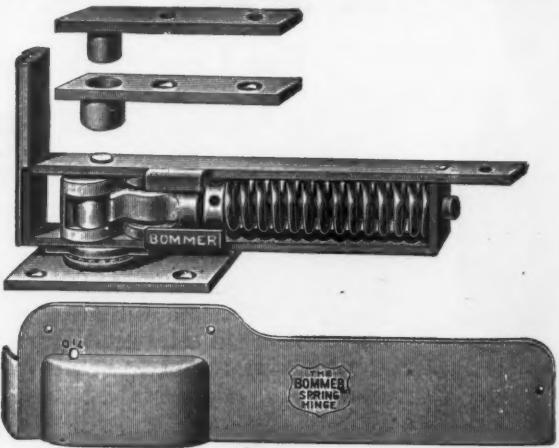
SAMUEL CABOT, Inc.

Manufacturing Chemists
1133 Broadway, New York 24 W. Kinzie St., Chicago
Cabot's Brick Stains, Stucco Stains, Conserve Wood Preservatives, Damp-proofing, etc.

BOMMER

Floor Surface Spring Hinge

Double or Shingle Action, Holdback, Ball Bearing. Every moving part of this hinge can be oiled from a single hole on outside of side-plate.



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side

Your Hardware Merchant Can Supply Them

Bommer Bros., Manufacturers, Brooklyn, N.Y.

WE WILL PAY FIFTY DOLLARS FOR THREE PICTURES

It is generally felt that the average house, built of brick or hollow building tile, is far more costly than frame construction.

Notwithstanding this assumption, a brick or hollow tile house has never cost as much as has been generally believed and at the present time, due to the ever increasing cost of good lumber, it now compares very favorably, in first cost, with good frame construction in nearly all parts of the country.

Hundreds of carpenter-contractor readers of the "American Builder" are beginning to find this to be true and are asking us for pictures and floor plans of brick and tile houses.

Believing that these contractors will be interested in such houses actually built by other readers of the "American Builder" we are offering \$50.00 in prizes for the best picture sent us before October 15th, 1919.

FIRST PRIZE \$25.00 SECOND PRIZE \$15.00 THIRD PRIZE \$10.00

If you have ever built brick houses, hollow tile houses or brick and hollow tile houses send us pictures of them, together with pencil sketches of the floor plans.

We prefer 8x10 pictures and detail floor plans, but kodak pictures and pencil floor plans will do.

No pictures of houses costing over \$6500.00 will be considered and every picture must have date house was built marked on back, name of builder, name of owner and cost to build.

Also state whether or not you can furnish working drawings, specifications and bills of material for all houses, pictures of which you submit.

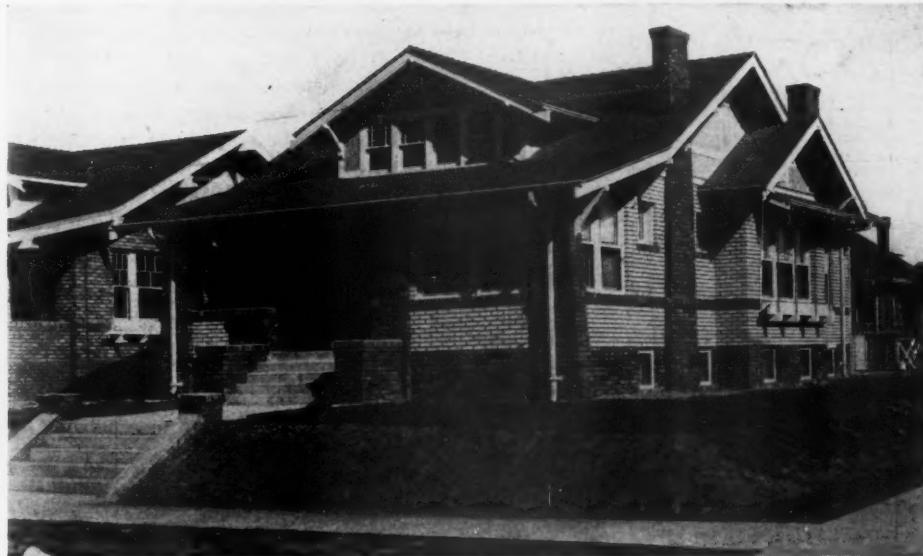
The approaching era is one of better homes; more permanent and fire-resistive homes—brick and hollow tile homes. If you have ever built such houses you owe it to other readers of the "American Builder" to show them what you have done; besides you may win one of these prizes.

When these pictures are all in they will be published in catalogue form and you will be furnished a complete copy with your name given under the picture of your house or houses as the designer or builder.

**THE PERMANENT BUILDINGS SOCIETY
CHAMBER OF COMMERCE**

CHICAGO, ILLINOIS

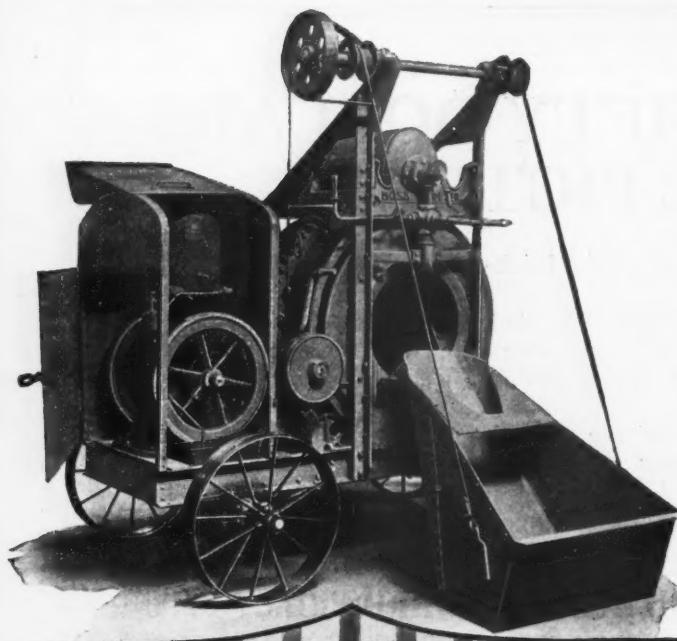
BUILT FOR LESS THAN \$3000.00 JUST BEFORE THE WAR



Send for Free Folder of Floor Plans and Story of Cost of Pre-war Construction

This attractive little six room solid brick bungalow was designed and built by an "American Builder" reader for less than \$3000.00 just before the war: Of course it would cost more now due to the increased cost of labor and materials; so would a similar frame house.

It is good examples of home building of this type that we want—not bungalows alone, but houses of all kinds. The style of the house will be given as much consideration as the cost, although cost is an important factor.



FASTER DISCHARGING

Also Stronger and More Uniform Concrete Thru
Our Patented High Speed "Re" Mixing Action

BATCH A MINUTE IF
YOU WANT IT

BOSS MIXERS
(MIX MORTAR AS WELL AS CONCRETE)

Hyatt Roller Bearings and Steel
Roller Pinion Drive Used in Boss
"Built of Steel" Mixers and Hoists

GET OUR NEW PRICES

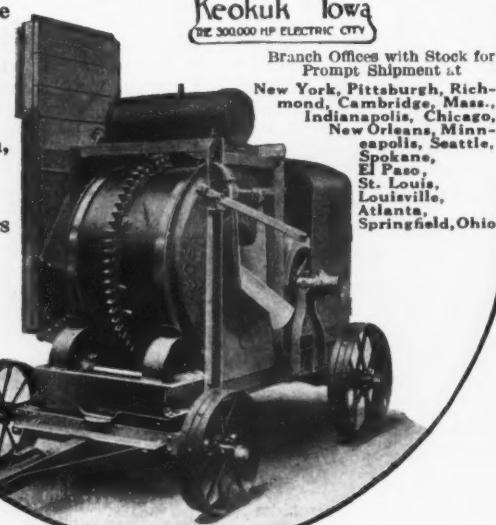
The American Cement Machine Co. Inc.
Keokuk, Iowa
THE 300,000 HP ELECTRIC CITY

Wire or Write

$\frac{1}{2}$, 1, 2, 3
Bag Sizes

Gas, Steam,
Electric

Low Chargers



lein Ceiling Bed Co., Minneapolis, Minn. Line drawings and specifications for builders are contained in the folder.

Spring hinges, door butts and door hardware are described and illustrated in catalog No. 43, issued by the Bommer Spring Hinge Co., Brooklyn, N. Y. The catalog contains 36 pages and cover and is well illustrated.

"**The installation and care of Master Heat Regulators**" is the title of a 16-page booklet, issued by the Master Heat Regulator Co., St. Paul, Minn., manufacturer of the Master thermostat. The booklet is well illustrated with halftones and reproductions of line drawings.

All-metal interlocking weather strips, invisible weather strips and metal guides are described by text and illustration in a 28-page and cover catalog, issued by the A. B. Brown Co., New York City. The window ventilators this company makes also are included in the catalog.

Advance Reground Waterproof Portland Cement, its uses, specifications and a description of the material are contained in a pocket-size 8-page and cover booklet, issued by the Advance Waterproof Cement Co., Chicago. The booklet also gives a list of buildings in which this material was used.

"**American Pressed Steel Sash Pulleys**" are described by text and illustrations in a series of booklets issued by the American Pulley Co., Philadelphia. One of the booklets gives a report of comparative tests of sash pulleys made for the company.

Art in shingle stains and several other paint specialties are described in a little 28-page and cover booklet, issued by Parker, Preston & Co., Norwich, Conn. This is an instructive and valuable booklet for painters, as it contains directions for applying paints and stains.

Sump guards and conductor screens are shown in a four-page circular issued by the Grand Rapids Wire Products Co., Grand Rapids, Mich., manufacturer of "Kant Krush" roof screens. The circular contains a description of the screens, which are made of heavy wire and welded by electricity.

Curtainless Shower Bath Equipment is shown in the folder issued by the Curtainless Shower Co., Waterville, Conn. Four kinds of showers are described, three detachable and one permanent, all of which are comparatively inexpensive.

•

Gluing Wood Coated with Varnish or Shellac

Glue joints between wood surfaces which have been coated with shellac or varnish have low or very erratic strength. This has been thoroughly demonstrated by a recent test at the Forest Products Laboratory, Madison, Wis. Sixty pairs of test blocks were prepared in which one or both wood surfaces were varnished or shellacked and were joined with either casein or animal glue. A great many of these blocks fell apart before testing, and all which held together long enough to be tested sheared apart in the glue joint and not in the wood.

The highest strength value obtained was 1,712 pounds per square inch, which is low for casein glue. The other values were 1,000 pounds per square inch or less. It is evident, therefore, that all shellac or varnish should be carefully cleaned from wood which is to be glued, if high strength is desired.

A few blocks were joined using shellac as a glued over surface previously coated with shellac. The maximum shear strength obtained was 1,425 pounds, the minimum 450 pounds, and the average 758 pounds per square inch. These values are low and do not indicate that shellac has gluing properties which compare favorably with casein or animal glue.

100 212
JAN 10

Contractors and Builders Stand by **Jaeger Mixers**

They swear by them, too, and not at them, because they produce in quantity, because they turn out perfectly mixed concrete and make possible a great saving of time, labor and money.

Jaeger Mixers are playing a vital part in the great building activity that is under way all over the country. Thousands of contractors owe their success to the efficiency of their Jaeger Mixers. Almost every contractor owns and operates one or more.

They are the most practical for any and all jobs—from the small sidewalk or foundation job to the largest bridge or building.

They are built to suit the needs of all contractors—they are built in a great variety of sizes.

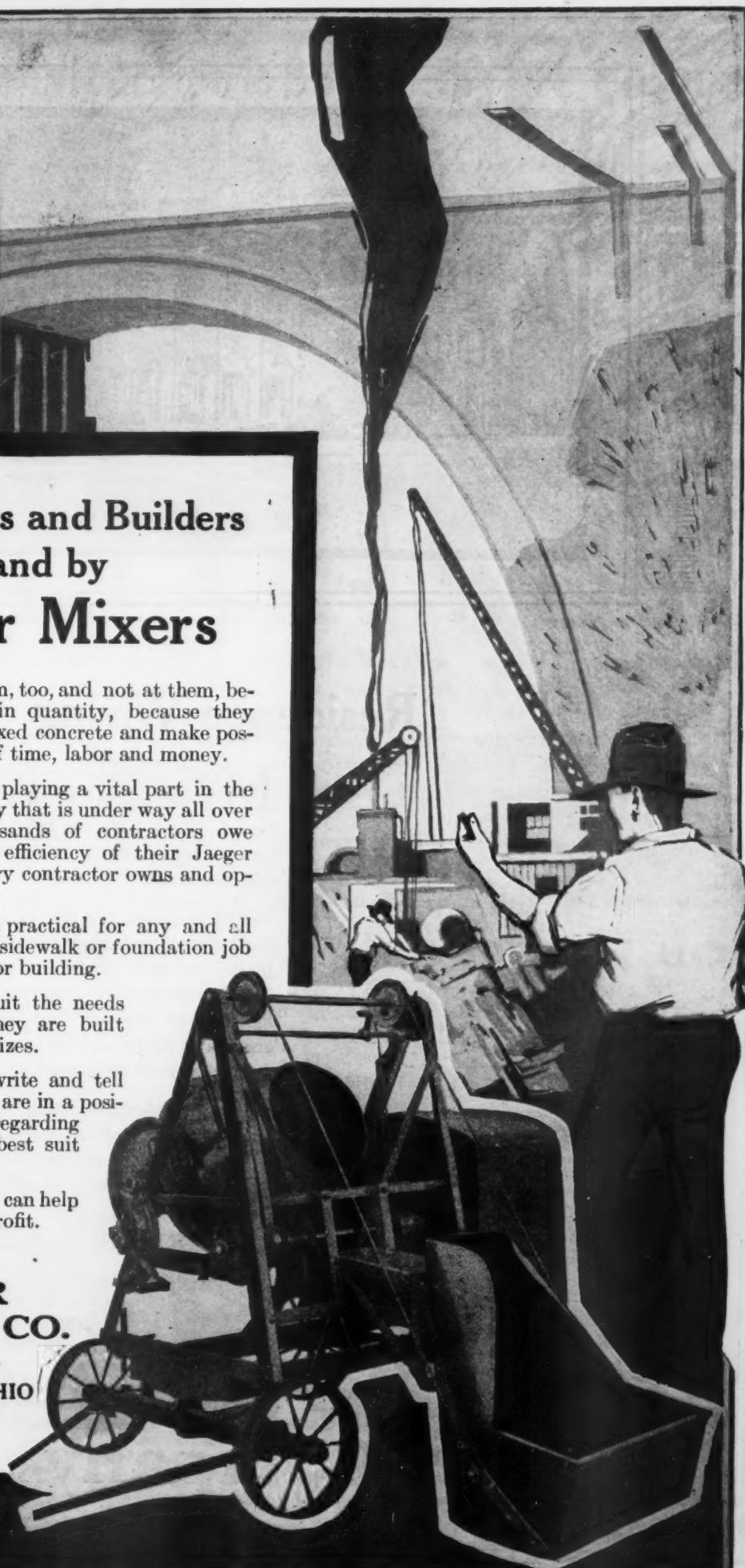
We want you to write and tell us your needs. We are in a position to advise you regarding the mixer that will best suit your particular case.

Write us today—we can help you make a greater profit.

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521 Dublin Ave.

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Residence Wiring

MOST old houses are found to be "underwired," when modern household appliances are introduced. They have not been provided with sufficient outlets, or the wires are not heavy enough to carry this new load.

When you plan the wiring layout, consult a reputable consulting engineer or electrical contractor. Insist on well placed receptacles in every room, 3-way switches for cellar and attic lights, plenty of light in all parts of the house and wires heavy enough to carry current for all the household conveniences now so increasingly popular.

The wiring device catalog, soon to be issued, will suggest many refinements in choice of devices you might not otherwise think of. Have you sent us your application for a copy?

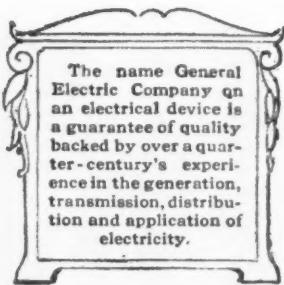
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*Can be furnished by any reputable
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all large cities.



Inflammable Construction is Back of Big Fire Losses.



Photo copyright 1917, by International Film Service
The Atlanta Fire in 1917 started in the flimsy structures
of the negro section. Property loss ten million dollars.

The total fire loss in the United States last year was approximately \$290,000,000. A highway of burned buildings one thousand miles long with the loss of hundreds of human lives and the serious injury of thousands of people.

Small fires cannot become big ones without fuel.



Why Fire Prevention Week October 6-12
is also

METAL LATH WEEK

Our per capita fire loss last year was \$2.63. Holland's was eleven cents. Carelessness with matches, poor electric wiring, defective flues, spark from locomotives and the like, are responsible for the start of many fires.

Inflammable building materials are in most cases responsible for their continuance. So in fire prevention let us give a big place to the use of unburnable materials like Expanded Metal Lath. At a cost comparing favorably with that of inflammable materials it makes stucco and plaster truly fire resistive.

Because Metal Lath is such an effective check to the spread of fire it is fitting that Fire Prevention week should also be Metal Lath week.

Ask nearest Berger Branch for Metal Lath Handbook F-3. It's a valuable text on Metal Lath Construction.

The Berger Mfg. Co., Canton, Ohio

Branches:	Boston	New York	Philadelphia	Chicago
St. Louis	Kansas City	Minneapolis	San Francisco	
Export Dept.: Berger Bldg., New York City, U. S. A.				

Home of Thomas Munger, Greenville, O.
Stucco and plaster on Berger's Expanded
Metal Lath.



BERGER

EXPANDED METAL LATH-FLOOR CORES-REINFORCING PLATES-METAL LUMBER
STEEL FILING CASES-LOCKERS-FACTORY STORAGE RIMS AND SHELVING
STEEL CEILINGS-ROOFING-SIDING AND OTHER PRERESSED STEEL PRODUCTS

You Can't Burn Berger Metal Building Products.

"THEY'RE BUILDING A NEW WORLD,"—MOSTLY OF

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"EXTRA DENSE SOUTHERN PINE."

(AUTHENTIC PINE STATISTICS IN THE BOGALUSA BOOK—FREE.)

Trade Mark Reg.
U. S. Pat. Off.

"FOR COMPLETE SECURITY
SPECIFY BOGALUSA."

A BOGALUSA LOG

WHIRLING FROM FLAT-CAR
TO POND—AND DESTINED TO
EMERGE FROM THE WORLD'S
LARGEST SAW-MILL AS A TIMBER 16
INCHES SQUARE, BY 75 FEET LONG.

GREAT SOUTHERN LUMBER CO.
1600 FOURTH AVENUE

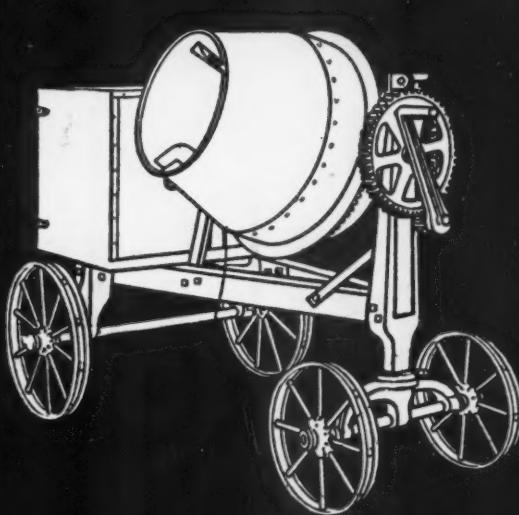
BOGALUSA, LOUISIANA.

"SOME LOG POND"
26 ACRES BIG.
TO TAKE CARE
OF 1,000,000
FEET CAPACITY
EVERY DAY.



Rigid grading at the mill as
per Factory Mutuals, A. S. T. M.
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Stewart



THE BUILDING SEASON IS AT ITS HEIGHT

BUILDERS are busier than ever before. Everywhere, big buildings, homes, barns, hog houses, feeding floors, silos, sidewalks, bridges, roads, etc. are being constructed—concrete construction is being pushed from every source.

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Why not take the bull by the horns—get in on the ground floor, equip yourself with a Stewart Mixer, rush out for the business, get it, and prosper instead of just getting along.

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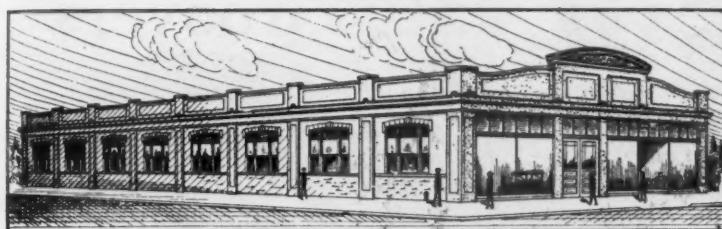
are the kind of machines that you can depend on—they save you dollars and make you dollars—they cut down the cost of mixing and the cost of upkeep.

They are built on the square and sold on the square. When you buy a Stewart, you get a machine that is well designed, well balanced and well made—a machine that will stand the knocks and deliver the profits.

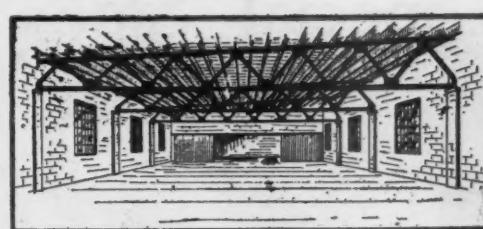
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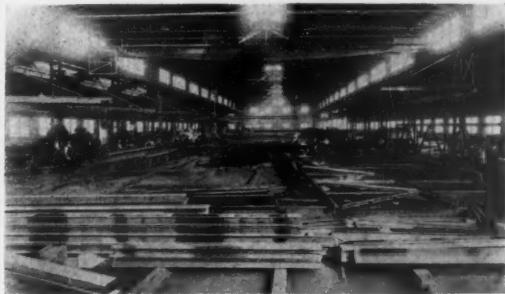
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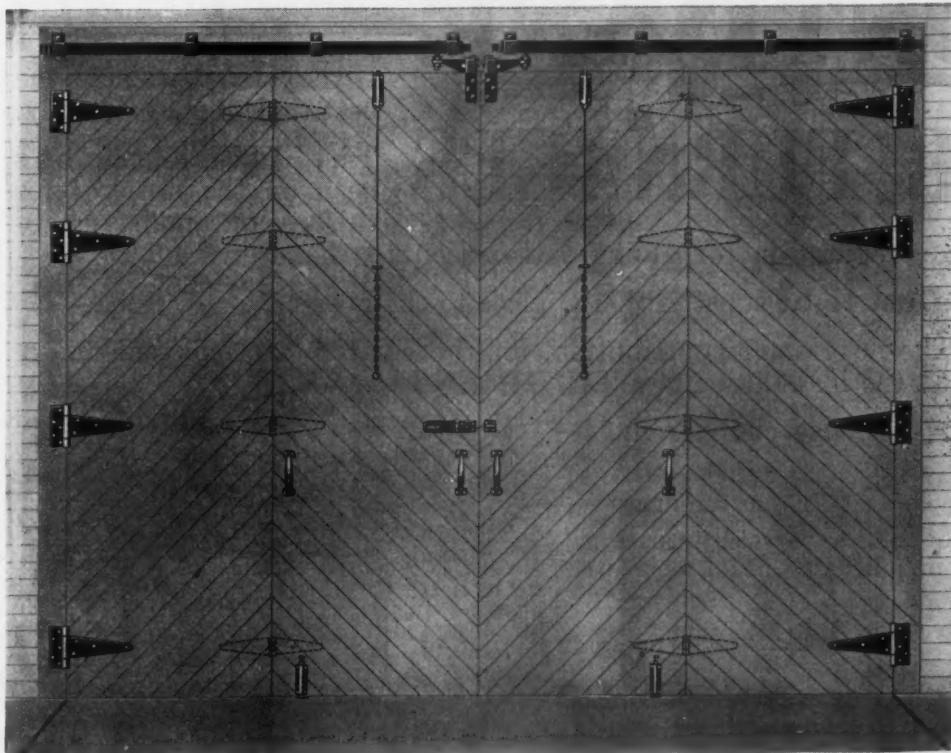


Illustration of FOUR door equipment for large Barn Doors

THE SHARON No. 9 HANGER

makes the ideal arrangement for large doors on Barns or Garages for it can be used inside or outside of the building, and insures easy working doors at all times.

The No. 9 is Sag-Proof and also folds the doors back parallel with the building allowing the use of the entire width of the opening.

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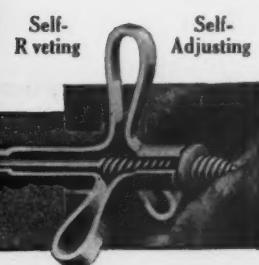
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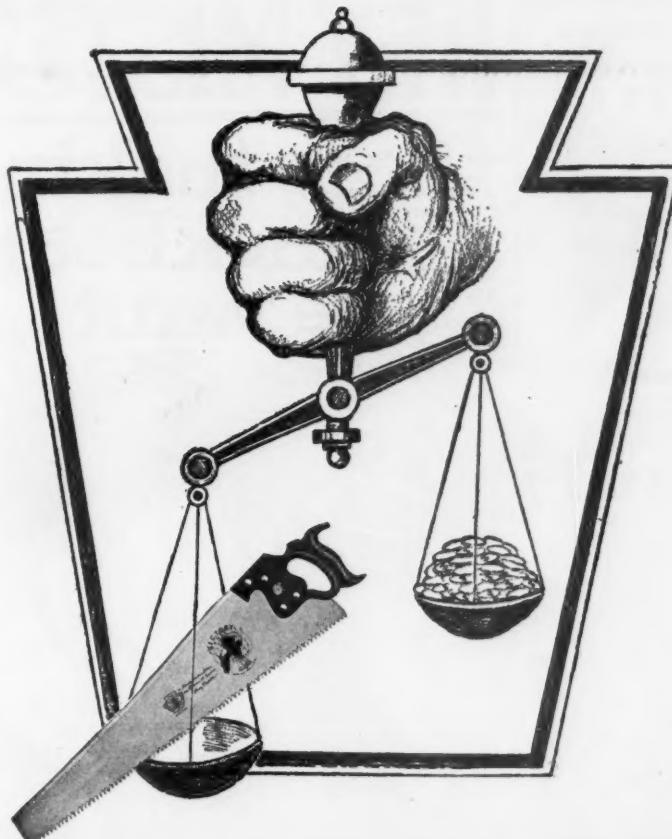


ANKYRA collapsed and holding fixture to hollow tile wall



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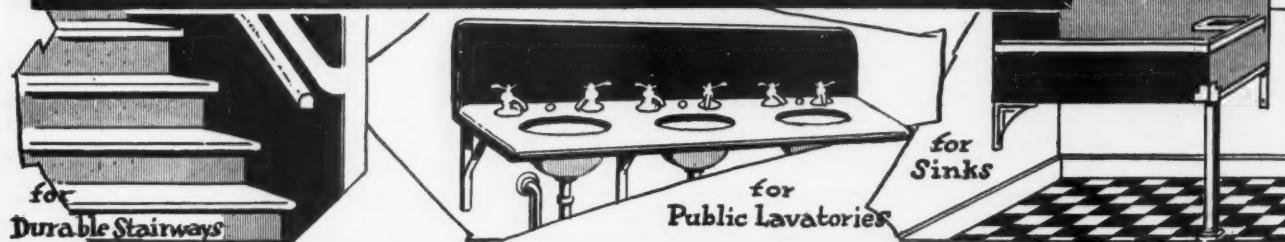
Because sink's and lavatories of structural slate will stand up under the hardest usage, are sanitary in every way and are therefore the ideal product for public places. Structural slate flooring maintains a beautiful and waterproof surface under the most severe conditions.

Because the use of Pyramid slate in such public buildings as the New York Hippodrome has proved it unequalled for hard wear. And because it has a non-slipping surface that is easily kept clean with warm water.

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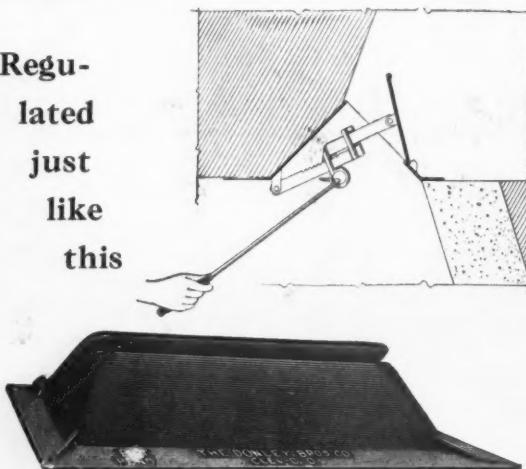


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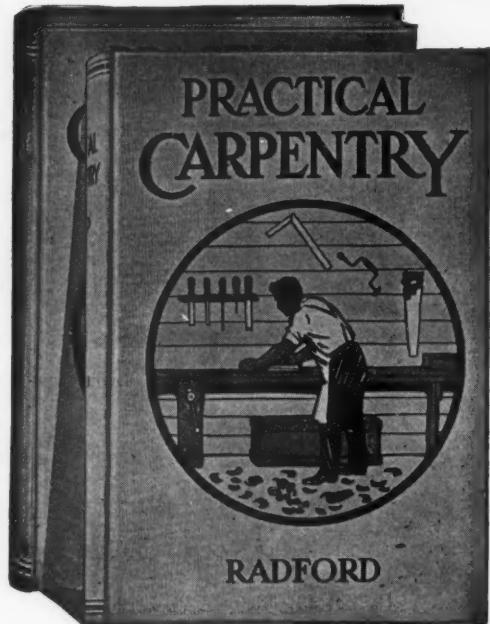
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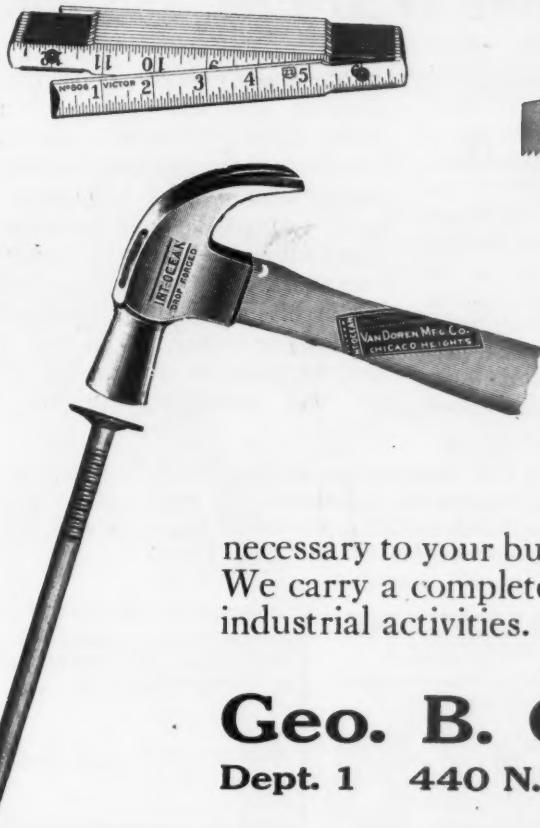
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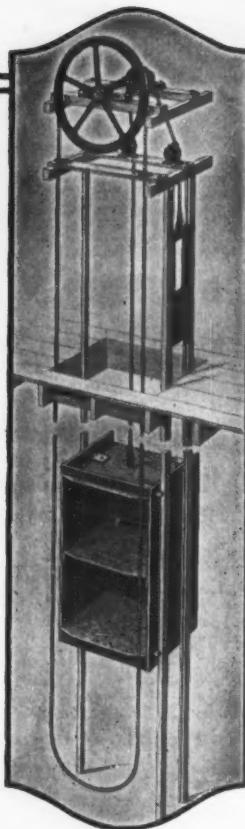


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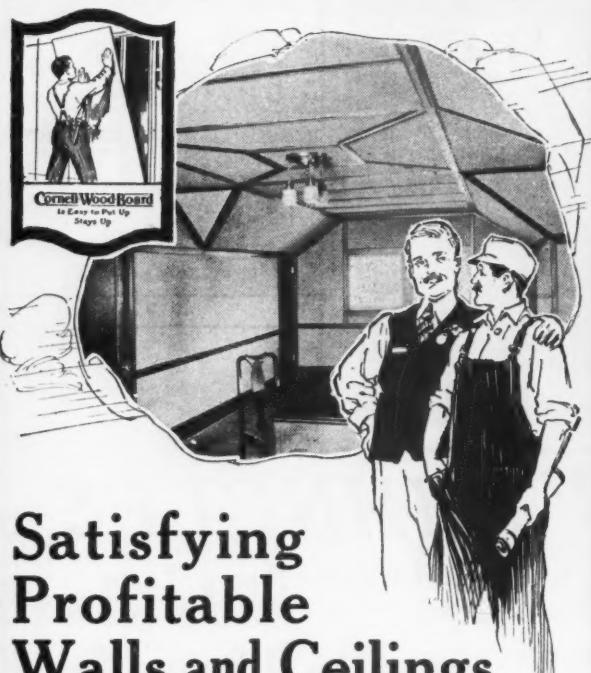
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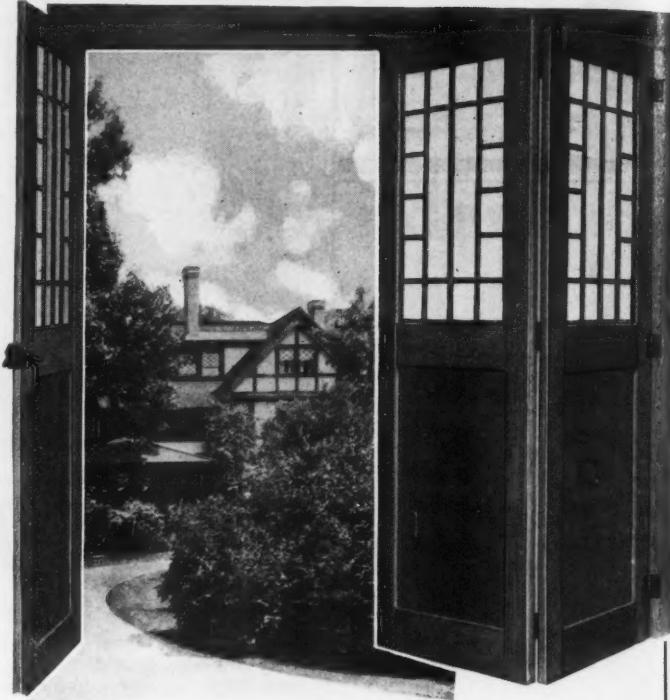
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Largest manufacturers of Wall-Board under one roof. Mills at Cornell, Wis. Operated by 20,000 H. P. Water Power

Cornell-Wood-Board

Excels for Walls, Ceilings and Partitions
Repairs, Alterations or New Work

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Makes Perfect Garage Doors

Contractors all over the country who want an efficient, strong and inexpensive garage door track and hanger find that this new Porter product solves the problem. And more.

It enables the doors to be opened without trouble or annoyance. It doesn't sag—slotted holes allow for adjustment where desired or necessary. It is storm-proof and weather-proof, and fits tight against weatherstrip.

STRAIGHT-AWAY
No Sag'
Garage Door Track & Hanger

It eliminates the curved track with its expense in installing and friction, because of its "offset swivel." Can be easily, quickly and economically installed by any man with hammer and screw driver. Its tandem truck can't jump the track.

Designed primarily for standard 2-foot 8 x 8 doors. Six feet of track is supplied—but for larger doors we can supply extra length.

Packed in neat carton containing parts and screws in envelopes plainly marked where they are to go. Specify Porter's Straight-Away and you've solved the garage door hanging problem in the most economical way. Write for literature and name of your local dealer today.

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477 Guion St.
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Make a Better Hay Rack, Grain Bed and Wagon Bed

It is now easy for any carpenter or farmer to quickly construct a strong, substantial wagon bed or hay rack by using our new Hay Rack and Wagon Bed hardware. We show you a simple, complete method for making a better body of the convertible or combination type at an exceptionally low price. Not only adapted to wagon beds, but the construction principles of the Allith-Prouty hardware is adapted for truck use, especially for handling grain and stock. Endorsed by agricultural colleges. Exceptional, practical, exclusive features found only in the genuine

"A-P" Hay Rack and Wagon Bed Hardware

Farmers. Make your own combination wagon body. The practical Allith-Prouty equipment, and simple instructions, enables you to quickly make a rack that is unexcelled, a wagon box almost water tight, a stock rack that slips on snug and solid—three bodies in one—hay can be loaded and unloaded faster and easier; grain loaded with less lifting; stock handled with greater ease and security.

Carpenters have work to do all year round making this farm utility. Complete plans are given you.

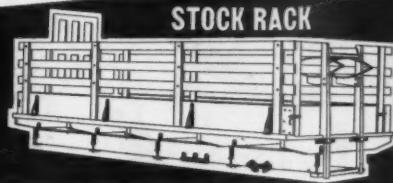
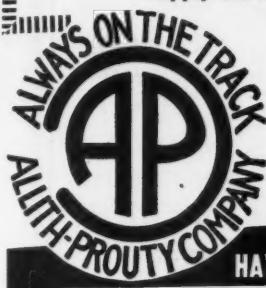
Farmers welcome your proposal to fit up their wagons with this combination because it saves them time, labor and money.

Hardware and Lumber Dealers. Here's another Allith-Prouty item that pays big. Wherever it has been introduced it is going strong; repeat orders come to us in every mail. Gets the hardware moving fast—the lumber going out of the yard—more than satisfies the farmer.

Catalogs, blue prints and special information promptly furnished free. Hardware or lumber dealers supply the hardware, or we will if they are not prepared to do so. Send for details today without fail.

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Chicago	New York	Boston	Philadelphia	San Francisco	Los Angeles
Door Hangers and Tracks			Overhead Carriers		
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Bishop's "High Speed" Saws No. 250
Retain Their Keen Cutting Edge

CUT EASY

Long years of hard usage only makes them more valuable to you. They are made of the finest steel carefully tempered—tough and flexible. The mechanic of today wants the best. He isn't satisfied with the ordinary saw that continually needs attention.

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will find that BISHOP'S "HIGH SPEED" No. 250 meets his every demand and more than fulfills his expectations.

We have made the "High Speed" for Mechanics who appreciate REAL merit in their tools. Careful attention is given them through the entire process of manufacture, and we know that we are giving you the best saw you can buy at any price.

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"A Saw For Every Purpose"

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Makes Your Job Pay*

Haste without waste is the Paasche way. One man with a Paasche can do the work of from four to eight men with brushes. Every drop of paint goes into the job. Clean uniform work without spilled paint and careless waste.

Whatever you wish to paint, the Paasche System will do it quicker, better and at less cost.

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You can use it anywhere from bridge painting to calcimining.

Send us a postal and get our illustrated folder telling all about this system.

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PUSH DRILL No. 44

Saves Time at Every Turn

Here you have a rapid fire drill, with adjustable tension for hard or soft woods and the 8 different size Drill Points furnished with it.

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AUTOMATIC DRILL N. 44
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AUTOMATIC DRILL N. 44
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A turn of the cap does the trick that saves time, labor and Drill Points. This drill is about as valuable to the average mechanic as any "Yankee" Tool we make. Built for hard service. Your dealer can supply.

Send for the "Yankee" Tool Book
A postal will do

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PHILADELPHIA, PA.



Beauty that is more than skin deep

Beauty that never wears off, is the beauty that Bay State Coating puts on walls of brick, concrete and stucco.

It goes to its work with a vengeance, 'cause it gives more than surface beauty.

It finds its way into every pore and settles there for life. It makes walls waterproof—at once and for all time.

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All brick, concrete and stucco should be waterproofed. "Bay State" not only does *that* but makes the building radiant in a delightful tint or pure white.

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Paint and Varnish Makers

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Through our extensive advertising campaign reaching hundreds of thousands of live prospects throughout the country, and through the national reputation of this thirty-year old concern, the Williamson Guaranteed Pipeless Furnace practically sells itself. In other words, we sell the furnace, you get the profits.

You are Protected by Guarantee Bond

The Williamson Guaranteed Pipeless is guaranteed by bond to heat a house to an average temperature of 70 degrees, or money back. The fire pot is guaranteed for five years. These guaranties, backed by a million dollar company, protect you absolutely.

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Not content with digging up pipeless prospects and helping sell them through advertising and our liberal guarantee, we assist you in installing the Williamson Guaranteed Pipeless. Send us a rough sketch of the house and our engineers will make a blue print showing just where and how to install the furnace to get best heating results. Detailed, illustrated instructions for installing supplied with each furnace.

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There are hundreds of prospects for pipeless furnaces in your community—let us help you sell them. We will follow them up frequently, with booklets, catalogs, folders, personal letters, until they just can't help buying a Williamson Guaranteed Pipeless. We sell the prospect, you get the profits. Mail the coupon today for further details of this profit proposition.

The Williamson Heater Company
81 West Fifth Street Cincinnati, Ohio

The Williamson Heater Company
81 West Fifth St., Cincinnati, Ohio

Please send me full details regarding your plan to help me make money selling and installing the Williamson Guaranteed Pipeless Furnace. This request is to involve no obligation on my part.

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Hand Power Steel Tube
DUMBWAITERS

BUILT TO LAST

We know that the "SEECO-BALTO" DUMBWAITER has many essential patented features not possessed by any other make.

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BIRCH FOR

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Beautiful
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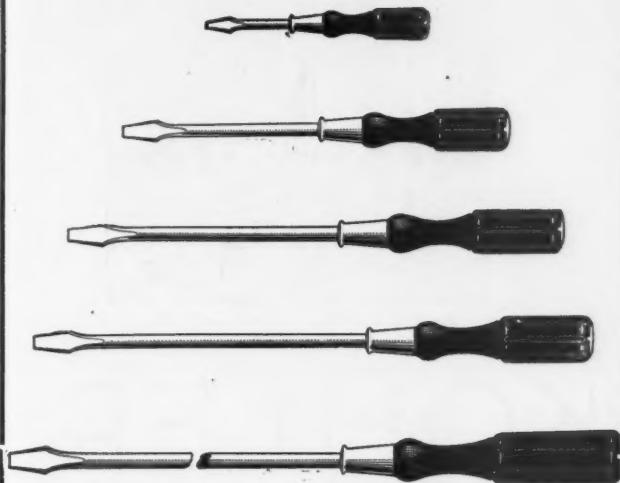
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This is our trade mark and the builder's joy mark! For trim, doors, and veneering that please the customer, make your reputation good and pay a profit, use "Beautiful **birch**."

Send for booklets and finished samples to show your prospects. Free.

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"HURWOOD" Screw Drivers

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Strength and
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Blade, Shank and Head are one piece of special steel. Two patented projecting wings under the head, together with a rivet which passes through the ferrule, handle and shank, securely fastens the Blade in the Handle, preventing its turning.

The Blades are finely tempered and well finished.

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Save \$43.00 This Easy Way

Here is your opportunity to own a genuine Oliver, Model 9, for \$57. The identical model formerly priced at \$100. Not a single change has been made in the machine in order to make this astounding reduction in price.

Only our sales plan has changed. We learned new economies during the war. We found it unnecessary to have great numbers of traveling salesmen and numerous, expensive branch houses throughout the country. We were able to discontinue many other superfluous, costly sales methods. You benefit by these savings.

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We ship the Oliver for free trial. You can keep it for five days. Use it as if it were your own. All without paying one cent in advance.

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You obtain the same wonderful model used by such big concerns as U. S. Steel Corporation, Pennsylvania Railroad, Encyclopedia Britannica, Otis Elevator Company, Nat'l City Bank of N. Y., and others of equal rank. Over 700,000 Olivers have been sold!

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Mail the coupon now for our remarkable booklet entitled "The High Cost of Typewriters—The Reason and the Remedy," sent free, together with details of our plan. Then you may order a FREE Trial Oliver.

Canadian Price, \$72

**The Oliver Typewriter Co.
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Builders' Combination Tool

Combines rule, square, level, protractor, bevel, pitch-to-foot indicator and plumb. Weighs less than three pounds.

Universal Scraper

Blade may be set at any angle by a turn of the handle. Guard slips on and off.

Combination Square

All parts are of drop forged steel.

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for builders and carpenters, such as Stair Gages, Measuring Bar Clamps, Transits and Tapes, Trammels, etc., are illustrated and described in the Starrett Catalog No. 21 "6." Sent free upon request.

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*The World's Greatest
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*Manufacturers of Hack
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Hotel Ritz, Barcelona, Spain: "and even oceans are no barrier"

KOHLER And HOTEL RITZ

Wayfarers in sunny Spain experience the grateful opportunity to be rid of the grime of travel in the Kohler "Viceroy" Built-in Baths of Hotel Ritz at Barcelona. Immaculately white always, because Kohler Enamel cleanses so easily, these hygienic baths—low-sided, full-sized, yet taking less space than usual tubs—are sought the world over for their quality; and even oceans are no barrier.

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You will find it convenient to have on file the "KOHLER of KOHLER" handbook. Request a copy.

KOHLER OF KOHLER

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Shipping Point, Sheboygan, Wis.
AND TWELVE AMERICAN BRANCHES

Kohler "Viceroy" Bath
Plate F-14-VL

MANUFACTURERS OF ENAMELED PLUMBING WARE

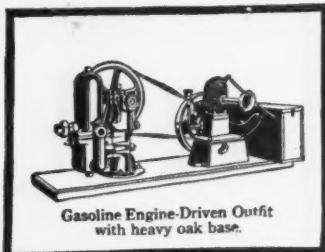
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display a composition of utility, durability and good, pure architecture without any "gingerbread." No buildings are too large or too small for our personal and prompt attention.

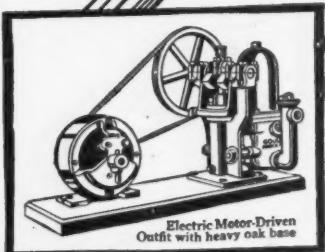
We develop your own ideas into a practical set of plans and specifications which can be executed to the smallest details into a building that can be built within your means and to your entire satisfaction.

Correspondence Invited

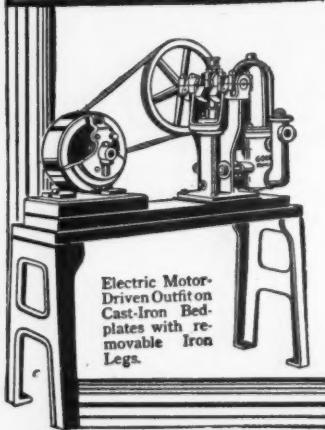
G. W. ASHBY, Architect
512 Medinah Building
CHICAGO



Gasoline Engine-Driven Outfit with heavy oak base.



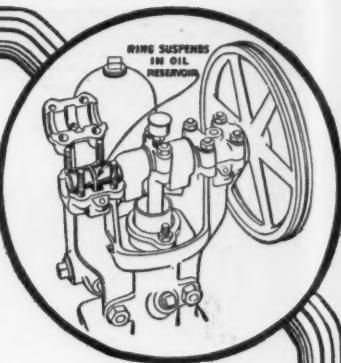
Electric Motor-Driven Outfit with heavy oak base.



Electric Motor-Driven Outfit on Cast-Iron Bed-plates with removable Iron Legs.

The "Hi-Speed" Oils Itself At Every Turn

ITS BEARINGS never get dry or hot as long as you keep the oil reservoirs filled. Notice the ring that hangs over the shaft and suspends into the oil reservoir located in the pedestal. At every revolution of the shaft this ring turns, and carries the oil to the shaft and into the bronze bearing as shown in the illustration. The lubrication is perfect on



GOULDS
HI-SPEED →
REG. U. S. PAT. OFF.

This pump may be had in any one of 13 different outfits—12 are electric-motor-driven, of which four are for use with the home-lighting system. Others are for 110 and 220-volt direct and alternating currents, while the gasoline-engine-driven outfit is

for those who have no electric current available. Any one of the outfits can be used for either open or compression tank water systems and will supply plenty of water—180 to 360 gallons per hour—for the kitchen, bath, laundry, garage, stables, gardens, lawns.

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We will mail you one. Besides being our wholesale catalog, this big, valuable, instructive Handy Man Book also contains many pages of practical plans, elevations, diagrams, etc. It gives many suggestions of what fixtures to select and how to install them, etc. Shows how to save unnecessary material, hard labor and time by doing your plumbing and heating this new original

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We furnish a special contractor's and builder's wholesale discount sheet applying to this big book.

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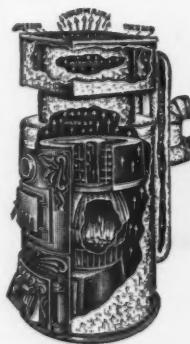
Our Handy Man Book describes over 10,000 different plumbing and heating fixtures and supplies, including plumbing outfits, water supply systems, warm air, hot water and steam heating plants and everything else pertaining to plumbing and heating supplies exclusively. Write today and save.

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40 Years at

4522-34P Cottage Grove Avenue, Chicago



Hardin-Lavin Pipeless Furnace



Hardin-Lavin Hot Water Boiler

Paint-up 5 Times Faster

This Sprayer Does the Work of 5 Brushes



YOU can not only save time—labor—money—on your different painting jobs, but at the same time produce an improved, longer lasting piece of work, by replacing the slow and inefficient hand brush-and-pail method of painting with the

Aeron Painting
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Portable Painting Equipment

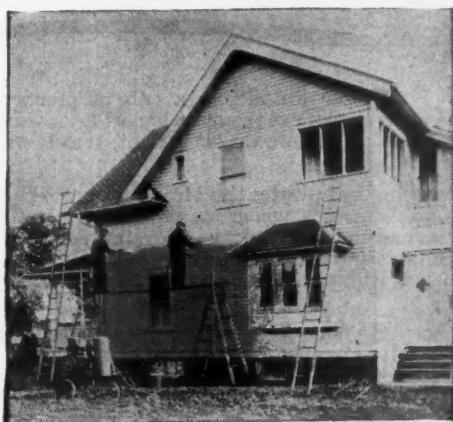
This modern time and labor saving outfit minimizes painting costs. It not only makes it possible for one man to do the work of five, but it spray-applies a uniform coating without brush marks or streaks, spattering or dripping. Any kind of paint can be applied with the Aeron on outside or inside concrete, brick, wood or metal surfaces.

This equipment is easy to operate and to move from place to place. It is simply constructed, dependable and requires very little upkeep expense.

What these advantages and economies will mean to you is evident—let us mail you the complete particulars

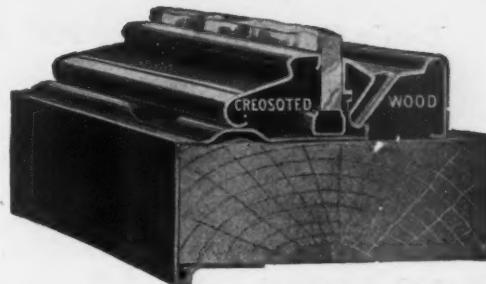
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*All Aeron Equipment is sold on a strictly
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Care and discrimination in the selection of **Copper Construction** for the new front is just as essential as in the choosing of any other important investment the merchant makes in his business.

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Manufacturing Company

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Brasco Mfg. Co., Chicago

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Town..... State.....

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AB-9-19

LIVING STONE

*the bond that holds 7,500 sq. feet of concrete
floor in this Arizona court house*

**Don't Gamble
With Concrete**

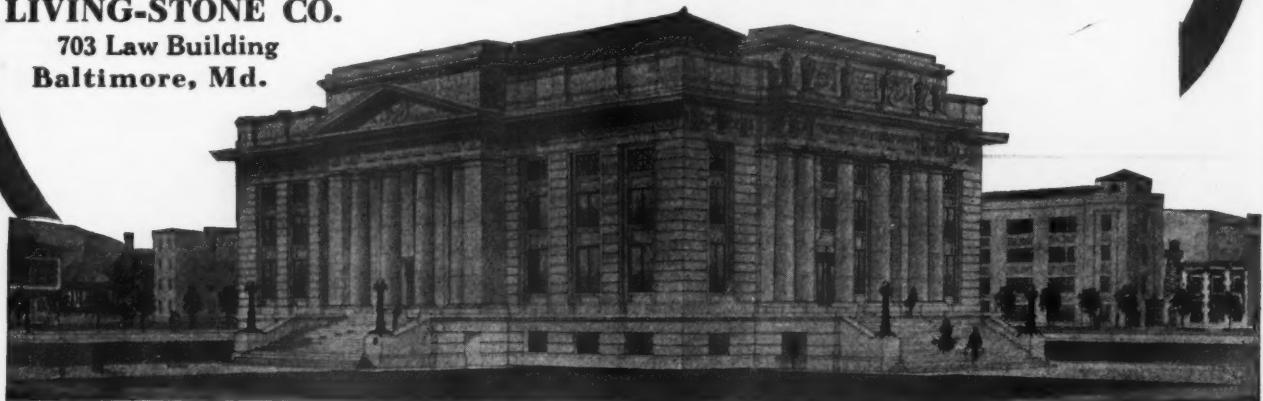
Not when at a cost of about one cent per square foot you can make sure of a perfect bond with Living-Stone.

We have an interesting booklet that we will mail you at once on request. Send postal now.

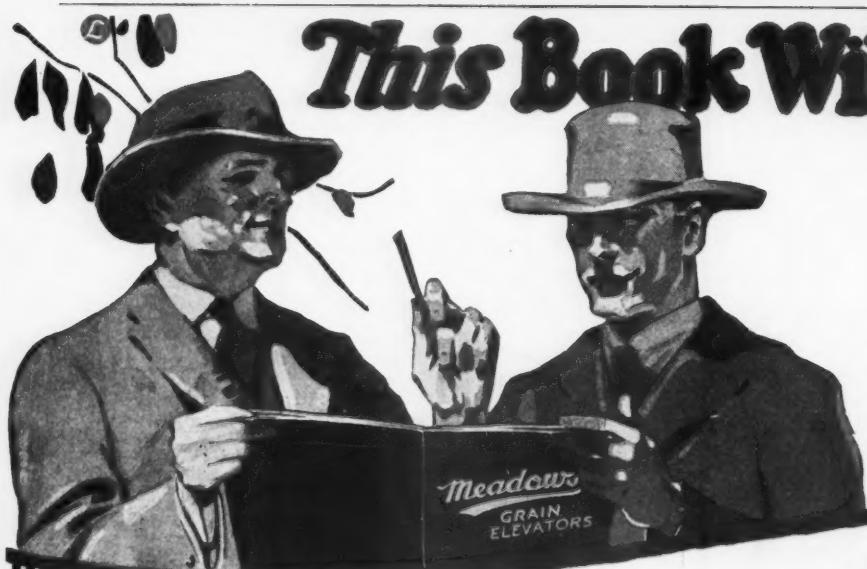
LIVING-STONE CO.
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The builders of this Prescott, Ariz., court house wanted a bond for their concrete floors. The old methods were out of the question, because they required the use of acids that break down the lime in cement and weaken the reinforcing metal.

LIVING-STONE was the natural solution. It has no acids in its make-up and acts perfectly as a bond for top finish. In all monolithic work, joints, and in stripping over exterior finish.



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give you the greatest capacity and the most satisfactory service at the least expense.

We invite you to write for our new illustrated book of crib plans. It describes in full why the Meadows Inside Cup Elevator is the one you should install. It tells all about the mechanical efficiency which we have built into the MEADOWS GRAIN ELEVATOR, the **enclosed** construction, both sides and the back of the elevator being enclosed, a notable feature of the Meadows, the positive delivery, the extra large sprockets in the hood which prevent the cups whipping around at the delivery point, and all the other features which have gained the Meadows recognition as one of the greatest labor saving devices on the farm.

The crib plans in this book will be of the greatest help and worth real money to you. They will show you how when building the crib you can save enough materials to pay for your elevator. It is free. Write for your copy today.

When considering a crib or granary, the grain elevator is the most important feature of construction. Be sure that it is right, that it will

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CONTROLS LIGHTNING
None Genuine Without this Trade-Mark

LIGHTNING RODS

**That are 100% Protection
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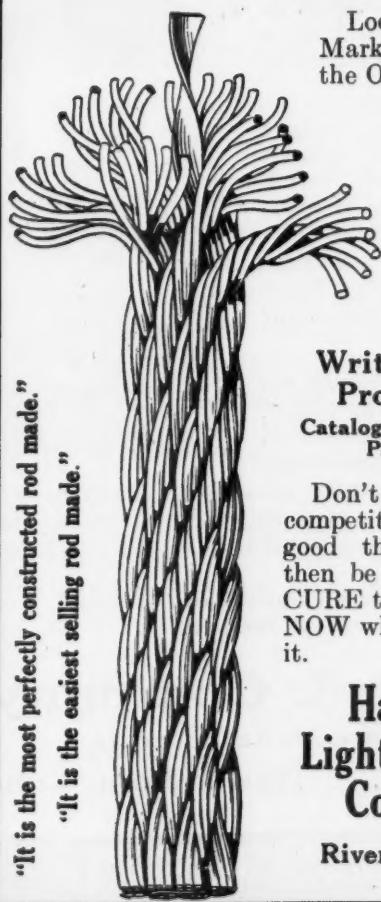
CARPENTERS and BUILDERS make large PROFITS selling our ALL FEATURE CABLE made of 36 strands of PURE SOFT COPPER with AUGER SHAPE PURE SOFT COPPER STRIP in center, which keeps the ground rod moist at all times. That's not all, it has all the wires on the outside exposed to the surface.

COVERING a period of 20 YEARS there has been over 120,000 buildings equipped with this SYSTEM without one single loss.

Your CLIENTS rely on your good judgment when they build. Lightning Protection is indispensable to their COMFORT. When you supply them with the HAWKEYE SYSTEM it means GUARANTEED PROTECTION for a Lifetime.

Don't be satisfied with just selling rods. Sell ABSOLUTE LIGHTNING PROTECTION. It costs no more than the ordinary.

Look for the Trade Mark on the Spool of the ORIGINAL ALL FEATURE LIGHTNING ROD. It is a sign of a MOIST GROUND ROD.



**Write For Our Proposition
Catalog, Samples, and Prices Free**

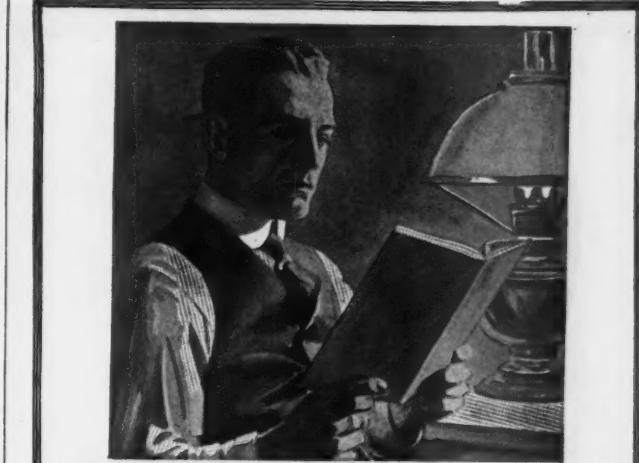
Don't wait until your competitor sees it is a good thing. You will then be too late. SECURE the AGENCY NOW while you can get it.

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Lightning Rod
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Riverside, Iowa

"It is the most perfectly constructed rod made."

"It is the easiest selling rod made."



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"Every hour I spent on my I. C. S. Course has been worth \$95 to me! My position, my \$5,000 a year income, my home, my family's happiness—I owe it all to my spare time training with the International Correspondence Schools!"

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| <input type="checkbox"/> Surveying and Mapping | <input type="checkbox"/> CIVIL SERVICE |
| <input type="checkbox"/> ELECTRICAL ENGINEER | <input type="checkbox"/> MINE FOREMAN OR ENG'R |
| <input type="checkbox"/> Electric Lighting and Rys. | <input type="checkbox"/> Metallurgist or Prospector |
| <input type="checkbox"/> Electric Wiring | <input type="checkbox"/> Gas Engine Operating |
| <input type="checkbox"/> Telegraph Engineer | <input type="checkbox"/> Textile Overseer or Supt. |
| <input type="checkbox"/> Telephone Work | <input type="checkbox"/> TRAFFIC MANAGER |
| <input type="checkbox"/> MECHANICAL ENGINEER | <input type="checkbox"/> AUTOMOBILE OPERATING |
| <input type="checkbox"/> Mechanical Draftsman | <input type="checkbox"/> Auto Repairing |
| <input type="checkbox"/> Machine Shop Practice | <input type="checkbox"/> Navigation |
| <input type="checkbox"/> STATIONARY ENGINEER | <input type="checkbox"/> AGRICULTURE |
| <input type="checkbox"/> CHEMIST | <input type="checkbox"/> Poultry Raising |
| | <input type="checkbox"/> Spanish |
| | <input type="checkbox"/> French |
| | <input type="checkbox"/> Italian |

Name _____
Present _____
Occupation _____
Street _____
and No. _____

City _____ State _____



Griffin Pressed Steel Door Stops

No. 640

Are drawn into shape from one piece of high quality Cold Rolled Steel making them extra strong—guaranteed **indestructible**.

The rubber bumper is made from the best rubber and is backed up by a metal disc, which in turn is knurled, "ENTRENCHED," in place—and will stand all the "Banging" one can possibly give it, and absolutely cannot work out of place.

Beautiful Yet Plain

Compare this beautiful, plain door stop with the ordinary kind. It is modern and when finished in any of the various Griffin Hardware Finishes, it harmonizes with the beautiful interior finish of the Modern Home or Building.

No sharp edges or corner to cut the hand on, catch the clothes, as the woodwork is dusted. This is the door stop your customer is looking for. Have your Hardware Dealer show them to you.

*Send for complete circulars
and information at once*

The Griffin Mfg. Co.
Erie, Pennsylvania

45 Warren St.
NEW YORK

17 E. Lake St.
CHICAGO



Building Activity Means Prosperity

The building trades are again coming into their own. Sargent & Company, not content to extend congratulations, is helping along the "build-your-own-home" national advertising campaign.

Housing will not be adequate until every builder has been going topspeed for many months. The house that builders and owners will take most pride in will have Sargent hardware throughout. There are designs and finishes for every use.

Putting up good homes requires expert craftsmanship. Sargent tools satisfy critical workmen. The ingeniously planned Sargent Auto-Set Plane is an example of fine tool making—it can be taken down for whetting and reassembled instantly with the same set as before.

*Write for Plane Catalogue with special
data on the Auto-Set Plane*

Sargent & Company
Hardware Manufacturers
51 Water St. New Haven, Conn.



HOMER

ORIGINAL PATENTED
PIPELESS FURNACE



- IT Heats
- IT Ventilates
- IT Satisfies
- Less Price
- Less Fuel
- More Heat

with **Thermo-Seal** inner lining

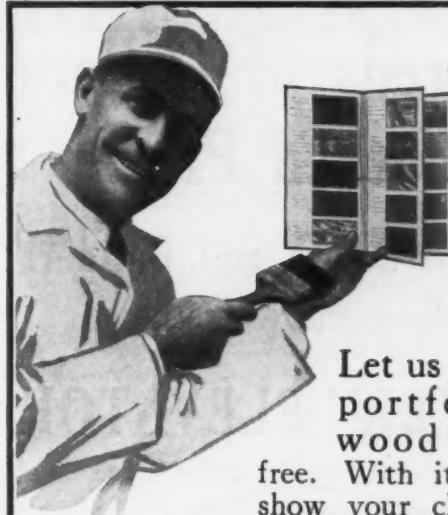
Contractors and Building Material Dealers

You are the logical person to represent the Homer Pipeless Furnace in your locality. There are going to be a lot of new homes built this year, and every one of them will need a heating plant. The Homer Pipeless Furnace is easy to sell and can be installed in any type of dwelling in less than a day's time.

The Pipeless furnace is no longer considered an experiment. Ten years ago when Samuel D. Strong, president of the Homer Furnace Company, placed the first pipeless furnace on the market, people were skeptical, but in ten years time the Homer Furnace people have placed over 40,000 in that many homes, and every one is giving complete satisfaction. The Homer Furnace has, without question, proven itself to be the most efficient and economical of all pipeless heating plants.

*Write us today for our special dealer plan.
We can start you in a year 'round business*

Homer Furnace Company
Homer, Michigan, U.S.A.



Let us send you portfolio of wood panels free. With it you can show your clients just how their woodwork and floors will look when finished with Johnson's Wood Dye, Prepared Wax, Under-Lac, Flat Wood Finish, etc.

In this portfolio the Johnson finishes are shown on all popular woods—panels of other woods sent on request. The portfolio also gives full specifications and instructions, as well as covering capacities. Any good painter can successfully use Johnson's Artistic Wood finish.

JOHNSON'S WOOD DYE

is a dye in every sense of the word—it is made in twelve different shades—it goes on easily and quickly without a lap or streak—and it is put up in glass jars so there is no possibility of color changing.

We will also be glad to send you free a copy of our booklet, "The Proper Treatment for Floors, Woodwork and Furniture." It is full of valuable ideas and information for any one interested in the proper finishing of wood. Its practical suggestions may mean money to you.

Use attached coupon

S. C. JOHNSON & SON
"The Wood Finishing Authorities"
RACINE, WISCONSIN

-----Coupon-----

S. C. JOHNSON & SON
"The Wood Finishing Authorities"
Racine, Wis.

Please send me free and postpaid your portfolio of wood panels and booklet, "The Proper Treatment for Floors, Woodwork and Furniture."

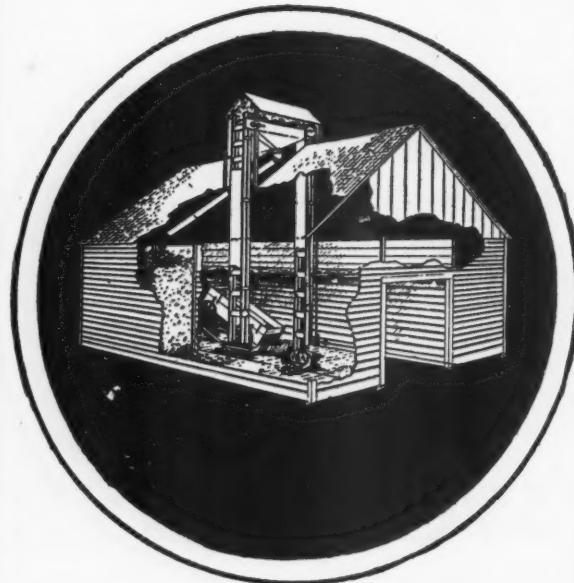
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S. C. JOHNSON & SON, Dept. AB9, Racine, Wis.

**Hundreds of Dollars
Untouched Profits
For Contractors and Builders
in selling the well known
“MEYER” ELEVATOR**



Admittedly the most correct engineering principles, the handiest and lightest running Elevator made. Only best and strongest materials. Easiest to install.

"J. C. Schrock, Milford, Neb., Contractor, sold 17 No. 1 Elevators in one year alone."

Valuable blue prints and large catalog free. Write for agency proposition today.

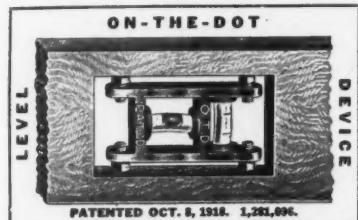
**A. F. Meyer Mfg. Co.
301 Wilson St.**

Morton, Ill.

ON THE DOT LEVEL DEVICES

This remarkable little leveling device is just the instrument carpenters, builders and mechanics have long been waiting for.

Where the job requires a level bar of considerable length and absolute accuracy, O-T-D level devices are of particular advantage.



O-T-D is a small instrument about three inches in length that can be mortised into any board (picked up on the job) making a perfect level or plumb Bob. The cut shows how the O-T-D level device is mortised into a board of any length desired. It is adjusted by four small set screws, one at each corner, which hold it firmly in place.

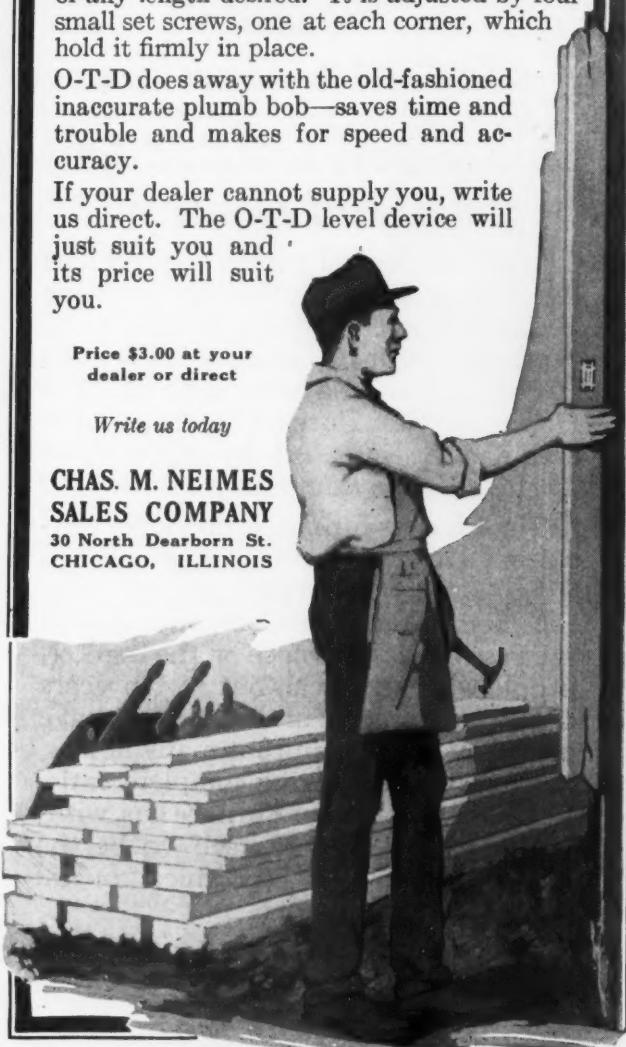
O-T-D does away with the old-fashioned inaccurate plumb bob—saves time and trouble and makes for speed and accuracy.

If your dealer cannot supply you, write us direct. The O-T-D level device will just suit you and its price will suit you.

Price \$3.00 at your dealer or direct

Write us today

**CHAS. M. NEIMES
SALES COMPANY**
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CHICAGO, ILLINOIS





Taken from Actual Photograph

Lightning Rods

CARPENTERS—BUILDERS

MAKE BIG EXTRA PROFITS WITH
BARNETT SYSTEM GUARANTEED Lightning Protection

Why let the big extra profit go to the other man after you have done the hard work erecting the buildings? This easy profit belongs to you. You are the logical man right on the job to install this protection on every building you erect. The owner's confidence in you will make it easy to secure this additional work and profit on the same job. Why not make \$50.00 to \$75.00 per week extra?

Our Rods are in big demand. (no joints) with attractive fixture. Made of pure copper endless cable, no rust work rods the building, and puts profit in your pocket. Money back guarantee with each job. Hundreds of our Carpenter agents began in a small way, now doing a big business. Secure the agency now. Write today for free Catalog, Cable Samples, and Prices.

Complete set of tools furnished free with first order of 500 feet or more.

JOS. L. A. BARNETT & CO., Cedar Rapids, Iowa



**PORTABLE
FOLDING
BATH TUB**

Agents and Contractors Need Wait No Longer

Your opportunity is here. Our portable folding Bath Tub is in great demand throughout the country.

The illustration shows it being let down ready for use. It is made of iron—all white enameled. It has a 12 gallon heater which is heated with either gasoline, gas or kerosene.

We also manufacture Indoor Chemical Closets—which, when considered along with our folding bath tubs, make a combination no rural home should be without.

Write for prices and agency

Leech Metallic Bath Tub Co., Foot of Leib Street, Detroit, Mich.



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GUARANTEED PRODUCTS
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ASBESTONE EVERLASTIC MAGNESITE STUCCO, the wonder of the age, is recognized by the leading authorities in building construction to be the most reliable exterior wall coating yet produced. EVERLASTIC STUCCO can be applied on wood, cement, brick, stone, etc., is non-absorbing, waterproof, fireproof, and will last a lifetime. EVERLASTIC STUCCO is superior to cement stuccos, in that it does not crack or chip.

EVERLASTIC STUCCO is the ideal material for old or new buildings. Enduring, Indestructible and artistic.

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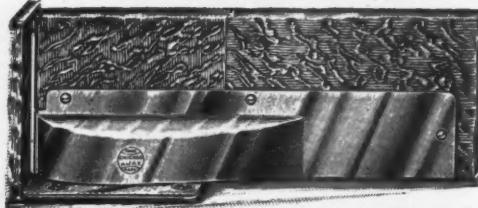
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full line of
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for
Carpenters
and
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SPRING HINGES**



**Appearance—Economy—Durability
The “AJAX”**

In the “Ajax” we offer a Floor Spring Hinge with Ball Bearings at the top of the Hinge, away from dust and moisture.

Alignment Adjustment that is easily accessible.

Roller Bearings for the piston, to overcome friction.

Durability, Economy and Appearance, backed by our REPUTATION.

Send for Catalogue C 36.

Chicago Spring Butt Company.

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NEW YORK



**Our New Catalogue 7-D is Now Ready
Send for It—Today**

AUSTIN DRUM MIXERS

CAPACITY 7 CUBIC FEET OF MIXED CONCRETE

FIT ANY JOB—BIG OR LITTLE

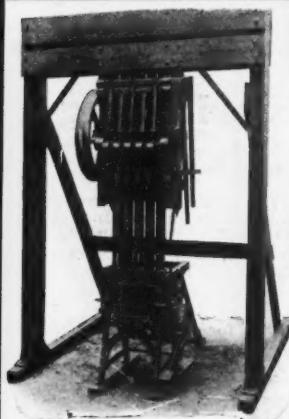
A dependable mixer that combines ECONOMICAL OPERATION—SPEED and THOROUGHNESS IN MIXING—AMPLE POWER—STURDINESS—LONG LIFE.

The AUSTIN DRUM MIXER is not a one-season mixer. It is built to last. Its compactness and sturdiness of construction eliminate the ever increasing repair bills that arise in mixers of inferior quality.

For nearly half a century, we have been building machinery for contractors. We know what they need and have built their needs into our mixers.

F. C. Austin Company, Inc.

Main Office: Railway Exchange Bldg. CHICAGO New York Office: 30 Church Street



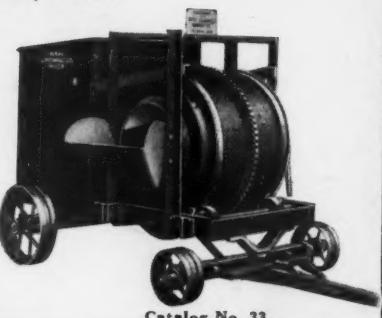
THE IDEAL CONCRETE MACHINERY CO.

1308 Monmouth Ave., CINCINNATI, OHIO



**Concrete
Machinery
for all
Purposes**

Ideal



**SPECIFY THE
HERRICK OUTSIDE ICING
REFRIGERATOR**

On All Your Buildings

No ice is needed in Fall or Winter. Filled from the outside in Summer. Progressive builders put their Refrigerator problems up to us.

Our Free Plans will be sent you on request. Build up your reputation by suggesting and specifying the

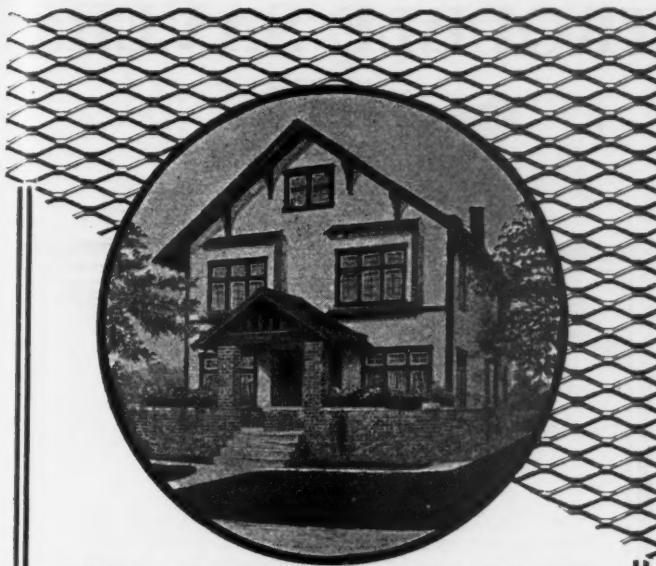
Herrick Refrigerator

Scientifically constructed. Assures perfect air circulation. Keeps foods clean and fresh. The Herrick requires no ice in cool weather.

Write for free plans and catalog

HERRICK REFRIGERATOR CO.
Waterloo, Iowa





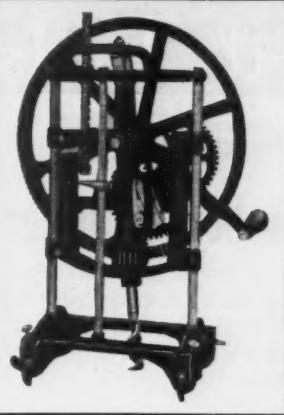
FIRE PREVENTION WEEK — October 6th —

We ask you to join with us during the week beginning October 6th in impressing upon the people of your community the great advantages of fire-resisting construction through the use of metal lath.

Let us all make a concerted effort—manufacturers, architects, engineers, builders, and dealers—and good results will follow.

If you need literature upon this subject, write us and we will see that you are supplied.

Sykes Metal Lath & Roofing Co.
504 Walnut Street Niles, Ohio



Champion Mortiser

The Only Machine that will make a perfect mortise with straight back and sides

The Champion will mortise hard, soft or knotty wood, cross grained or end wood, through dowel pins or panel ends without the use of brace, bit, chisel or any other tool.

Automatic and ball bearing.

Graduated scale for any depth. Lock screws which keeps machine in center for all doors of same thickness.

Adjustable for any hardness of wood.

Used for door mortises, closets and cabinet doors, screen frames, sash mortises, folding doors, etc.

Will Pay for Itself in One Day!

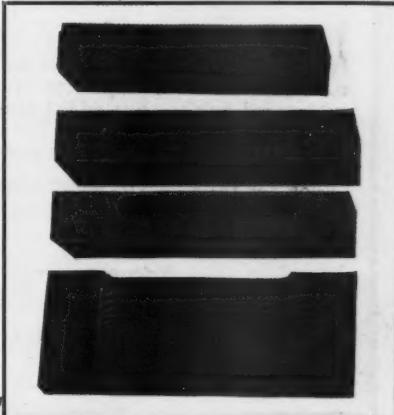
One man can cut 120 door-lock mortises in 8 hours. Just turn the handle, the Champion does the rest. No measuring or marking of centers. Adjustable from round hole to $\frac{1}{4}$ " slot.

Try It Before You Buy It!

We want you to try the Champion out in your own workshop and will send it on ten days' trial. No deposit required.

Write a postal now for our circulars.

Coldan Machinery Supply Co.
916 New Hayden Bldg.
Columbus, Ohio



A POINTER



for all users of pencils and rubber erasers

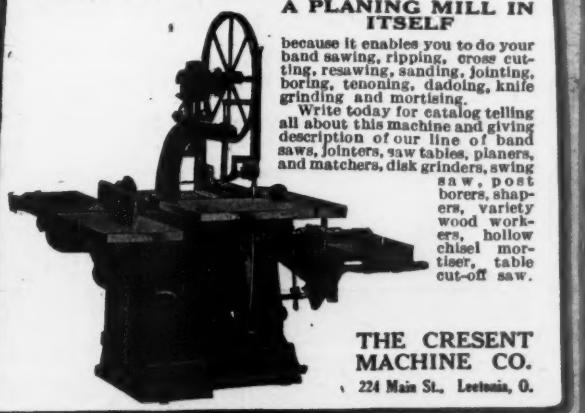
This Pencil Pointer, No. 3208, with emery paper pad $1\frac{1}{4} \times 3\frac{1}{4}$ in., 12 sheets, is a combination article. The pencil is pointed on the emery paper pad and the point smoothed by drawing through the velvet-lined slots shown in the illustration. The slots on back are for cleaning rubber erasers rapidly and effectively. The emery paper pad, removable, can be replaced for 10c.

25c Prepaid

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THE CRESENT MACHINE CO.
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TRADE MARK Red Devil Tools



Satisfaction in a Screw Driver

The screw driver is such a simple tool that most folks pay very little attention to it and think all screw drivers are alike. Careful mechanics know that they aren't—that there's as much difference in them as in any other tool.

For instance, consider

Red Devil Screw Driver No. 1514

First we take the best grade of tool steel, forge it and temper it just right. We make the handle of selected non-splitting hardwood, shape it to fit the hand and give it a rubberized finish. For added strength, the blade is extended through the handle. The result is a screw driver that stands up to its work for years—a *real* tool.

Look for the "Red Devil" trade mark on your next screw driver. It is the expert mechanic's guide to known quality in hand tools.

Write today for the "Red Devil" Tool Booklet

SMITH & HEMENWAY CO., Inc.
106 Coit Street

Irvington, N. J.

Let a BUCKEYE be the Finishing Touch

Sell the farmer a BUCKEYE Cupola Ventilator for that new barn you are building him.

It's easy. Nine out of every ten want a ventilating system and you can sell it along with the job. There is a liberal profit in this for the contractor or builder who cares to represent us in his own territory.

BUCKEYE VENTILATORS

Most farmers know of BUCKEYE VENTILATORS. They have the finest kind of reputation as a scientifically correct and well built product.

Easily Installed

It's an easy job to put up the BUCKEYE. No fussing. No fitting—just a few bolts and screws to fasten. Complete plans and expert engineering advice are offered without cost.

Write us today for particulars. Address

THE THOMAS & ARMSTRONG CO.
361 Union St.

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TROUBLE SAVERS



The "Trouble Savers" steel scaffolds will save enough time, lumber, and nails on the first job to pay for themselves. They are safer, too! And because they are light and fold compactly, they are convenient to handle.

MR. BUILDER:—

This scaffold can be used in all kinds of construction work where scaffolding is necessary;—upon the first trial it is sure to win your satisfaction, as it has thousands of others throughout the country.

Send for circular illustrating and describing "Trouble Savers."

THE STEEL SCAFFOLDING CO.
EVANSVILLE, IND.

TRADE MARK
QUICK ACTING *The Taylor* SELF LOCKING

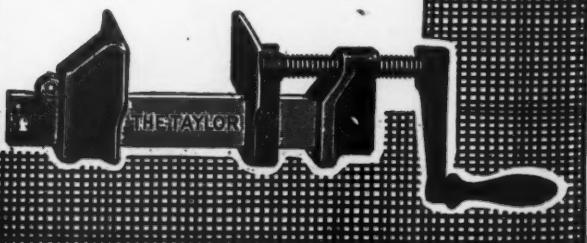
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An Investment
Not an Expense

The quickest and strongest clamps made. That's why they're the standard in U. S. Government Works and in such concerns as General Electric Co., Singer Sewing Machine Co., Victor Talking Machine Co., etc.

We can PROVE it in your own shop. Write today.

James L. Taylor Mfg. Co.
Poughkeepsie, N. Y.



Send 25¢ for this DOLLAR



PORTFOLIO of Color Schemes

Exteriors and interiors, also floor plans and specifications for finishing every room in the house—a big collection of color plans. Illustrations in full color. This Portfolio actually costs one dollar each—we send it for 25¢ to cover packing and postage—giving you this big value to get you acquainted with the softest tone flat wall paint—an oil paint that shows no laps or brush marks.

Patton's Velumina

PATTON PAINT COMPANY
MILWAUKEE WISCONSIN

"Yale" Carries Prestige

THE greatest of banking institutions use Yale Time Locks to guard their massive vault doors.

The same Yale protective skill and knowledge and experience that make the banks of America safe produce the Yale Builders' Locks and Hardware guarding millions of American homes.

You can call with confidence upon "Yale" for every Builders' Hardware need.

We are always glad to co-operate with architects on any Builders' Hardware problem.

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It has the
**SIMONDS STEEL
FEEL and
QUALITY**

The same STEEL that passed the rigid requirements of its use by the U. S. Government during the war.

The same FEEL that has made Simonds saws a favorite amongst workmen from lumber jacks to cabinet makers.

The same QUALITY that since 1832 has never failed.

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To Show You a SIMONDS

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FITCHBURG, MASS.**

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5 Factories and 11 Branches



ROOFING TIN

In Rolls of Our
Dependable Brands

The recognition of being specialists in the manufacture of roofing tin in rolls is assurance that we supply well made and durable products. Any of our well known brands can be furnished in rolls.

"Merchant's Old Method" Camaret

"Merchant's Roofing" Franklin Old Style

All seams are well soldered.
Made 10, 14, 20 and 28 inches wide, painted on one or both sides as you prefer.

Gutter Tin in Rolls

Single locked, soldered one or both sides and double locked, soldered one side.

MERCHANT & EVANS CO.

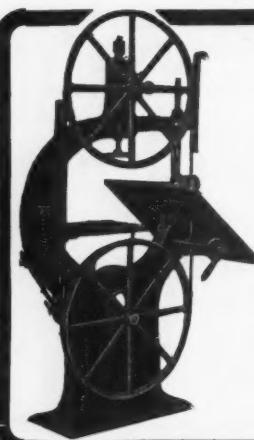
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WHEELING CHICAGO

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PROFITABLE SAWS

SILVER SAWS embody such principles and improvements as make it possible for them to PRODUCE!

They have proven their superiority by a most remarkable record of satisfying service.

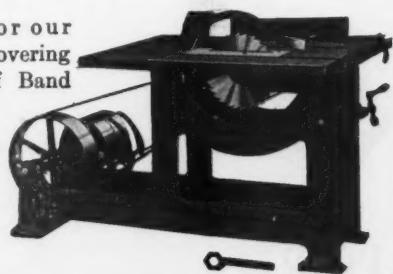
Their praises rise from the lips of half a million enthusiastic contractors all over the United States.

A TIP

Don't let your competitor take

the lead. Equip your shop with Modern Silver machinery and be assured of the utmost wood working machinery efficiency.

Write today for our illustrated catalog covering a complete line of Band Saws, Swing Saws, Saw Tables and Jointers in various sizes and styles.



THE SILVER MFG. CO.

Box 345, Salem, Ohio

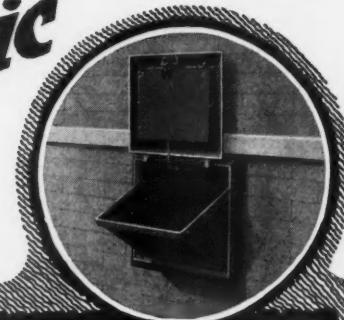


Fiberlic WALL BOARD

The material from which it is made, the fact that the pulp is chemically cleansed and that the fibre lengths give the finished product that natural reinforcement that is lacking in ground wood boards, is in itself a guarantee of the superiority of Fiberlic for strong, permanent and sanitary construction.

MacAndrews & Forbes Company
200 Fifth Avenue, New York City
Factory: Camden, N. J.

The Majestic Coal Chute



THERE is an extra good profit for contractors and dealers, and a pleased customer, wherever you place a

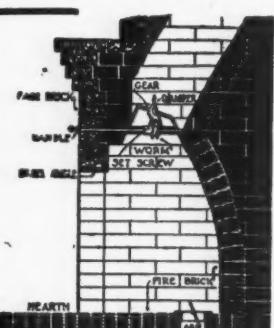
MAJESTIC COAL CHUTE

The Majestic appeals to every builder in that it improves his foundation, protects his building, and lessens depreciation on his property.

MAJESTIC FEATURES—The Majestic is easily installed in homes already built or new homes. It protects the building just where the damage always occurs from bounding coal lumps and coal dust. Locks automatically. Constructed of semi-steel and boiler plate it will last the life of any building. Serves as a window when not in use.

Write today for catalogue 12G and working drawings.
Also name of nearest jobber.

THE MAJESTIC COMPANY
880 Erie Street
Huntington, Ind.



Build the Fireplace Right

Don't try to reduce the cost by leaving out a good damper. It results in an expensive fireplace to operate and allows rain, wind, birds, and other objectionable things to enter the room when the fireplace is not in use.

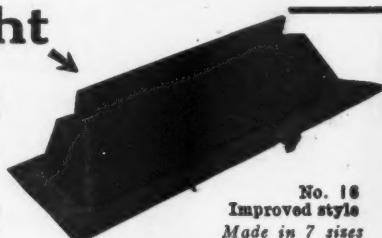
Stover Dampers support the brick work, form a smooth throat, regulate the draft perfectly, and reduce the labor cost of erecting fireplaces.

The price is low enough so a Stover Damper can be used in every fireplace. Made in several styles for all size openings. The Improved style shown above is one of the most popular.

Send for catalog No. 1740 showing our fireplace fixtures and giving information as to the best fireplace construction.

We also make wind mills, feed mills, gasoline engines, hinges, pulleys, saw vises, latches, sink brackets, and other hardware.

Stover Mfg. & Engine Co.
Freeport, Illinois



Stover Mfg. & Engine Co., 725 East St., Freeport, Ill.

Send us Catalog 1740.

Name Business
City State

AN UNOBSTRUCTED WINDOW OPENING ON THE SUN PARLOR OR SLEEPING PORCH WITHOUT POSTS, MULLIONS NOR OBSTACLES OF ANY SORT IN THE OPENING, MAY BE HAD BY EQUIPPING THE WINDOWS WITH



Multifold Casement Window Hardware



Windows operate smoothly, positively and under perfect control. Close storm-tight. Entire window may be thrown open, or one or more sash, as desired.

Sash open inside. Screens applied outside. Windows are easily cleaned.

Send for handsomely illustrated folder containing description and details.

Richards-Wilcox Mfg. Co.

A Hanger for any Door that Slides
CHICAGO ST. LOUIS LOS ANGELES PHILADELPHIA —————— AURORA, ILLINOIS, U.S.A. —————— BOSTON NEW YORK MINNEAPOLIS SAN FRANCISCO LONDON, ONT.

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75 per cent of the Store Fronts in your town need remodeling

You can install a Coulson front on each one, at a big profit to yourself, and know that you are helping your customer increase his profits at least 50%. No matter what condition the front is in you can make it up-to-the-minute the Coulson plan. Coulson fronts are easy to build. We furnish everything complete, ready to install. All Coulson exclusive features are patented, this protects you as well as ourselves.

Write us today for complete information about Coulson Fronts

THE J. W. COULSON & COMPANY
95-107 W. Spring Street COLUMBUS, OHIO



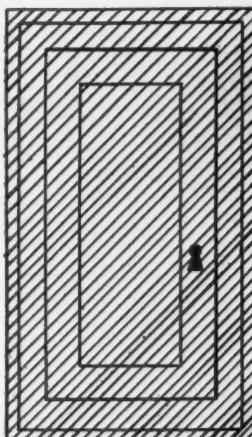
STOCK FIRE PROOF DOORS

METAL AND METAL COVERED

Standard Sizes in Stock of all Designs

Write for Booklets and Price Lists

A.C. CHESLEY CO. 279 RIDER AVE.
INC. NEW YORK, N.Y.



OF EVERY \$400 SPENT FOR GASOLINE
\$200 IS WASTED



Using kerosene in a 6 HP "New Way" Engine for 300 working days saves over \$200 yearly on each engine used, other sizes in proportion. You cannot afford to use any other fuel than kerosene for your power.

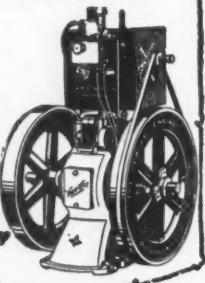
A Contractor Says

Gentlemen:—I have used the "New Way" Throttle Governed 6 HP Kerosene engine running a 10' Eureka Batch Mixer for fourteen months. The kerosene consumption is practically identical with that of gasoline so my fuel bill is cut in half.

I have found the "New Way" Kerosene engine as easy to operate and start as any gasoline engine.

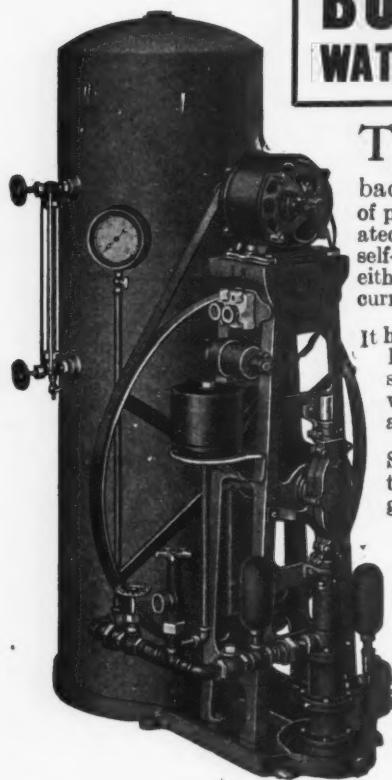
Signed V. D. Minnis.

Manufacturers and contractors will increase the efficiency and economy of their outfits by equipping them with the "New Way" Kerosene Engine.



The New Way Motor Company
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THE Buckeye Electric House Pump is backed by forty years of pump success. It is operated automatically and is self-oiled. Equipped with either alternating or direct current motor, as required.

It has a capacity of 180 gallons per hour, which is sufficient to supply the water demand in almost any home.

Shipped complete ready to install; this insures a good substantial profit to the Builder or Contractor.

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CLOSET**

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**The Waterbury
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affords modern closet convenience for homes, schools, factories, churches and all buildings where water and sewers are not available.

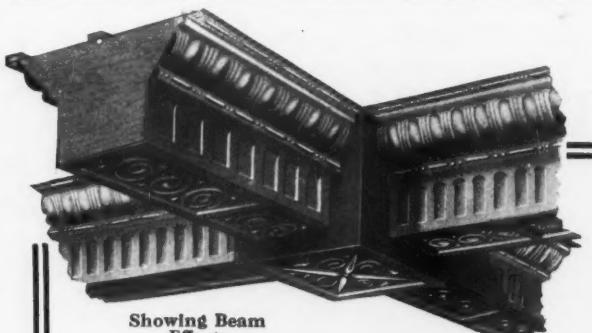
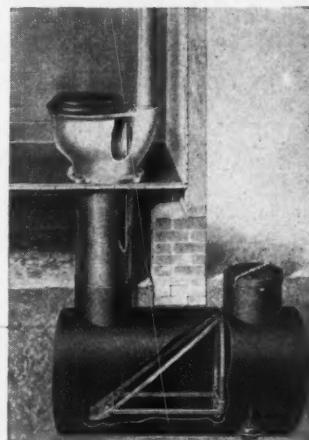
Town and farm families are demanding the convenience and comfort of indoor closets. The "Waterbury" so completely supplies this need that it surmounts all competition.

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Write us at once for information on exclusive agency offer.

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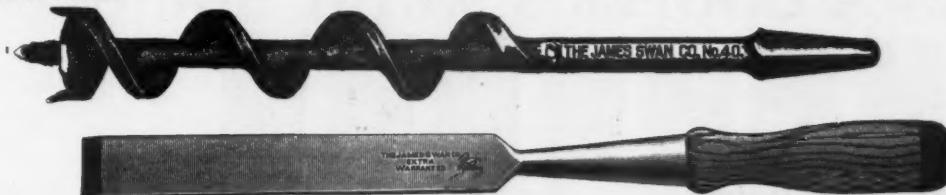
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Buy only Carpenters' Tools bearing the Trade Mark which stands for Quality.



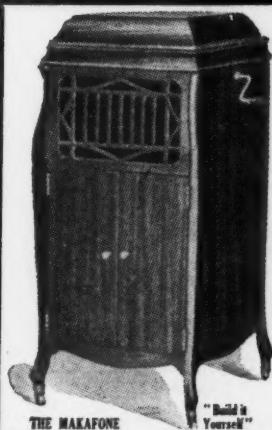
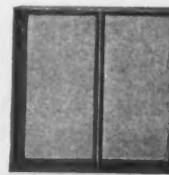
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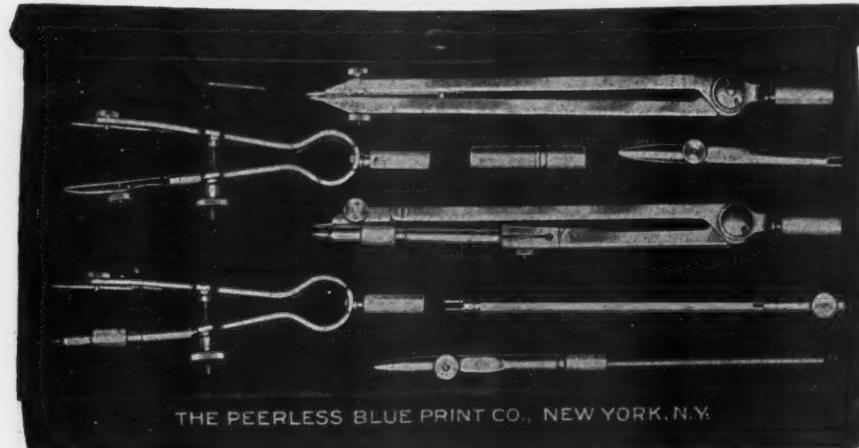
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The Most Complete Line of Designs The Best Quality Workmanship and Finish
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The TRIPLE "A" Spring Driven Floor Smoother will be found a great help to the building contractor and the floor specialty man during the coming period of reconstruction.

Here is a machine that does the work of six men — one week's work in a single day. Figure the saving.

It has a powerful automatic spring motor that does more than half of the work — adds nothing to the cost of operation, yet doubles the efficiency of the machine. You will need to try this machine to be convinced of its marvelous work performing capacity and the high quality of the work that it does. Every Triple "A" user is an enthusiastic booster. You will want one before long — better write us now and get full particulars.

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SPEED-ECONOMY-STRENGTH



Capacity—2000 pounds. Body—8 feet long, 46 inches wide, 12 inches high. Body and under frame built of open hearth steel. Axels—1½ inch square bed, special high carbon steel. Springs—Semi-elliptic, oil tempered and double heat treated. Bearings—Bower roller. Wheels—1½ inch spoke, artillery type, second growth hickory. Tires—32x2, solid rubber. Weight—534 lbs.

Other models with gates at front; also extension tongue which permits carrying lumber, poles, ladders, etc. 30 feet long.
Write for Catalog C.

Rogers Brothers
COMPANY
Albion - - - Pa.

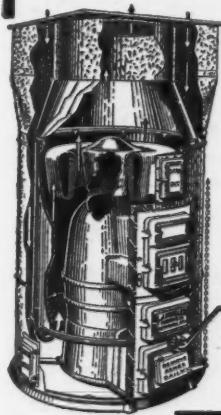
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Write today for illustrated catalog with blue prints showing how easy to install the Pullman UNIT Sash Balances.

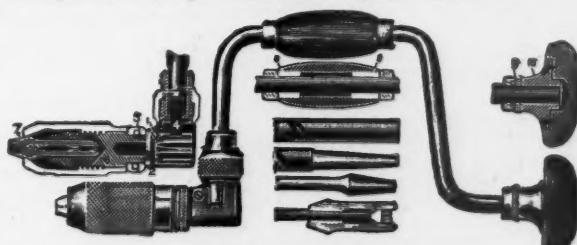
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10 Industrial St., Rochester, N. Y.

PULLMA
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Pullmanize Your Windows®

V & B Patented Ratchet Brace

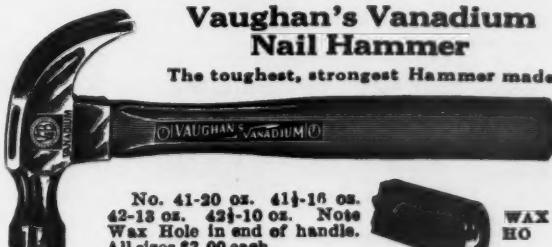
V & B Braces are unique in construction. The chuck cannot work loose, as there is no end screw. Our patented key construction holds the chuck firm. The jaws will hold all styles of bits up to and including one-half inch.



Nickel Plated—Walnut Handles—Ball Bearing Head
No. 222 Brace. All sizes. 10-in. sweep, \$3.50 each

Vaughan's Vanadium Nail Hammer

The toughest, strongest Hammer made



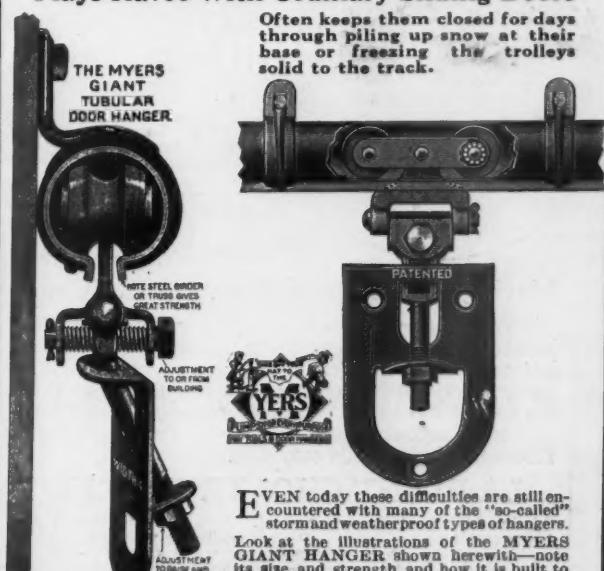
No. 41-20 oz. 41½-16 oz.
42-13 oz. 42½-10 oz. Note
Wax Hole in end of handle.
All sizes \$2.00 each.

Vaughan & Bushnell Mfg. Co.
Makers of Fine Tools
2114 Carroll Ave., CHICAGO

Winter Weather

Plays Havoc With Ordinary Sliding Doors

Often keeps them closed for days through piling up snow at their base or freezing the trolleys solid to the track.



EVEN today these difficulties are still encountered with many of the "so-called" storm and weather proof types of hangers. Look at the illustrations of the MYERS GIANT HANGER shown herewith—note its size and strength and how it is built to operate in and be protected by the heavy Tubular Girder Steel Track—absolutely free from obstruction even under extreme conditions. Simplified adjustable features permit doors being raised or lowered or moved in or out. Large steel rollers, steel roller bearings and oscillating frame produce easy operation. These are the improvements which make the MYERS GIANT a real hanger for all weather sliding doors. Are you supplying your customers with it or any of the eleven other styles of Myers Hangers? If not, we solicit your inquiries. Catalog and prices on request.

F. E. MYERS & BROTHER
No. 110 Orange Street
Pumps Hay Tools
Ashland, Ohio
Door Hangers



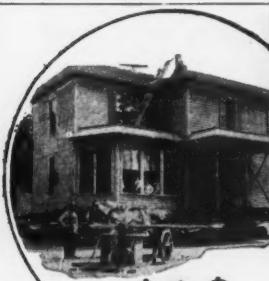
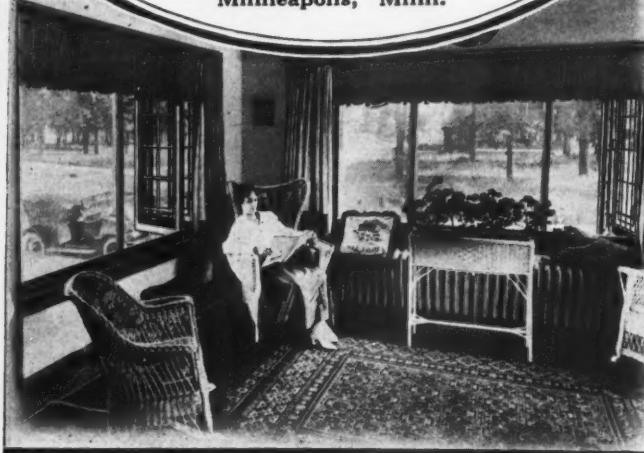
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They completely overcome all the faults, inconveniences, and inartistic appearance of old style check-rail, drop sill or tipping windows. They permit wide, unobstructed openings, are easily screened and draped, easily operated and storm-proof when closed. They are furnished complete—stock mill work, factory-fitted with patented hardware, ready to set into the openings. Save time in estimating and building.

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Whitney Window Corporation

1420 E. Franklin Ave.
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Move Houses Don't Wreck Them

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CARPENTERS

Make Big Money

Moving and Remodeling Old Buildings

Bigger profits are made every day by moving old buildings to cheaper lots, remodeling them and selling them instead of wrecking them. When you wreck a building you get very little money out of it. Buildings that are moved, fixed up a bit, bring a good price and big profits. Customers are easy to get. Profits are big. House-moving is made easy with

LA PLANT CHOATE TRUCKS

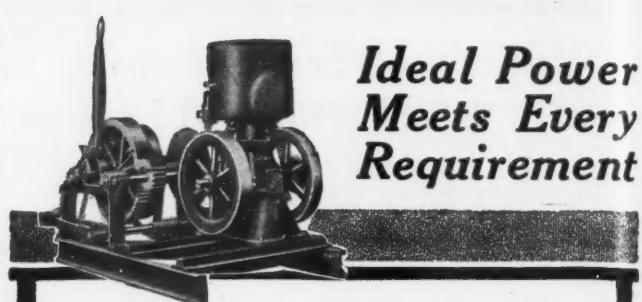
Made of the best Bessemer steel. Will carry heaviest loads and last for years. Perfect oscillator prevents racking of building. Hundreds of users testify about the remarkable efficiency and money-making features of these trucks. Every house-moving contractor should investigate this proposition. It means big money for you. Let us show you how you can make 100% larger profits.

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Free Book B
Tells All About It

30 Days'
Free Trial



Ideal Power Meets Every Requirement

When you need a pumping outfit—a hoisting outfit or any labor saving machine of this nature, you will find Ideal Engines and Ideal Equipment will meet practically every requirement.

Ideal Pumping outfits are made in various types and a wide range of capacities. Force pumps, diaphragm pumps, centrifugal pumps, etc.

Hoisting outfits of the single drum and double drum types, one way and reversible in various sizes for both light and heavy duty.

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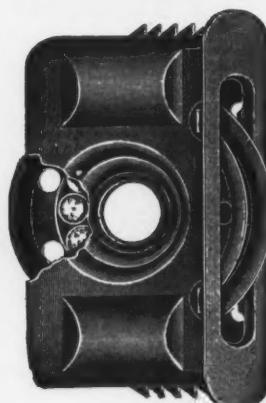
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Ball Bearing ALL STEEL Sash Pulleys

Fasten Automatically
No Nails—No Screws
Just Bore Four Holes

The automatic saw tooth fastening feature and the simple and easily made mortise will save in labor enough to pay for the pulleys.

The bearings contain eleven $\frac{1}{4}$ -inch Solid Steel Balls running in lubricant, insuring a noiseless, easy running wheel under any load.

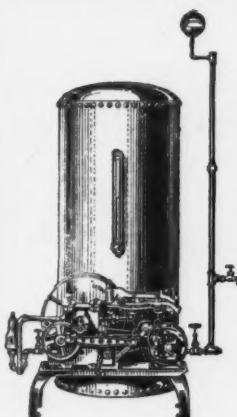
NOISELESS—EVERLASTING
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Fifty Different Styles

Grand Rapids Hardware Co.

Manufacturers

158 Eleventh Street - Grand Rapids, Mich.



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The Hoosier System shown above is for shallow well or cistern pumping. It is electrically operated and automatically controlled. Capacity of pump, 250 gallons of water an hour, pumping against 50 pounds of pressure. This system is especially suitable for displacing water lifts in city residences for supplying soft water to service lines in the house. Economical to install and to operate.

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KENDALLVILLE, INDIANA

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These materials are so much cheaper than wall paper and oil paints, and are so much better than lime wash that every wide-awake builder and owner should investigate them fully, learn which are the most practical, and find out how much they will help to reduce costs.

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Our products are more practical than any similar ones on the market, and are sure to please you.

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PEARL WIRE CLOTH should be specified for all

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EASIEST ON THE EYES**

Look for the two copper wires in the selvage
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*G & B PEARL is made in two weights—regular and extra
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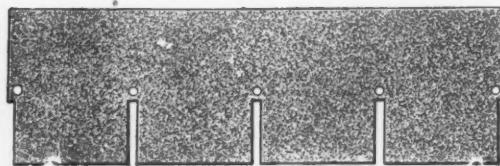
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NOT just a low priced Mixer, skimped to keep the price down, but a scientifically strong light mixer—a dependable producer—built in big volume to keep the price down.

4 and 7 cu. ft. capacity mixed concrete—gasoline or steam. Standard hopper and low charging platform, batch hopper or power charging skip, may be equipped with automatic water-measuring tank, and light duty hoist. Write for catalog No. K5.

Koehring Machine Co.
MILWAUKEE, WIS.

The final choice



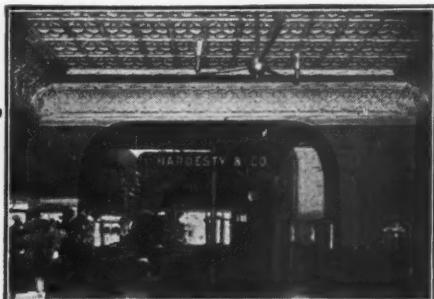
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Asphalt—Slate Surface

Samples and prices on request



The Flintkote Company
Asphalt Shingles Prepared Roofing
90 Pearl Street, BOSTON
New York Chicago New Orleans



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The demand for Edwards' Metal Ceilings and Walls isn't coming—it's here now! Thousands of home owners and home builders are reading our advertisements in the leading magazines. We must have more agents. Our product is right. Our prices are right.

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It's going to be a case of "first come, first served" with favors to no special one. Right now the territory is being snapped up. Don't wait. One day's delay may mean that some one else will be given your territory. Don't delay; write today for new Ceiling catalog and special agent's proposition.

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The World's Largest Manufacturers of Metal Roofing, Metal Shingles, Metal Spanish Tile, Metal Ceilings, Metal Garages, Portable Buildings, Metal Lockers, Rolling Steel Doors, Partitions, etc.

No. 1



No. 5117

THE Builder who selects a K&E Level or Transit shows good judgment, since he is thus sure of getting a sturdy, reliable instrument, moderate in price and made by a house whose reputation is based on quality and fair dealing.

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such as for wall linings of ocean-going steamships where it stands the supreme test of vibration, moisture and strain, proves conclusively the strength and efficiency of



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Its center core of kiln-dried wood slats—the only wall board thus made—is the secret of its strength, durability, co'd, heat and moisture-resisting qualities and its adaptability to a wide variety of decorative methods.

Compo-Board is the modern wall lining. It will not buckle, warp, or shrink. So tough that it can't chip, crack or mar, and is not injured by ordinary knocks.

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The Compo-Board Co.

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THIS Cottage is one of fifty homes shown in a portfolio of photographs selected from the work of prominent architects. Whether remodeling or building, you should consider the architectural value, the economy, of "CREO-DIPT" STAINED SHINGLES for roofs and side walls. Save painting expense by using "CREO-DIPT" STAINED SHINGLES. Save labor—no fumbling on match material. Save a run-down appearance and repair bill every few years.

"CREO-DIPT" STAINED SHINGLES are made of selected red cedar shingles square sawed from straight grained logs. Our inspection of quality and seasoning guarantees against waste. They are preserved and given one of thirty different shades by the "CREO-DIPT" process of grinding pure earth pigments twice in pure linseed oil, and driving the colors into the wood fibers with creosote oil. Proof against dry rot and weather. Will not wash or fade out in streaks.

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Cottage of Mrs. Lillian Brown, Meridian, Missouri. Architect, Roy Seldon C. Price, St. Louis

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K Cupolas



FARMERS know OK Cupolas—know they are most efficient in ventilating barns, hog houses and other farm buildings—know they are durable, rust-proof, storm-proof, rot-proof, bird proof.

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OK Cupolas are easy to erect, shipped ready to install. Made of heavy galvanized steel. Neat in appearance.

Let us show you the way to get more profits and more jobs.

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Hook 'em On. That's All

Kees

Storm Sash Hangers

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saving
Devices
for
Carpenters
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are demanded for their convenience. Hooked on and suspended from the top. Windows can be opened out any distance from the bottom.

Keys patented guide flange makes it easy to steer the sash into place. No perilous reaching to put on or take off the sash. Ladders and tools are not needed.

A pair or set consists of two complete hangers. Each pair is wrapped separately with 8 screws. Hangers and screws are steel japanned or galvanized.

Your customers are sure to appreciate these modern work-savers. It's the *regular* way to hang a sash.

Ask your hardware or lumber dealer or write us. Dept. 522.



Have You Watched a Blystone in Operation?

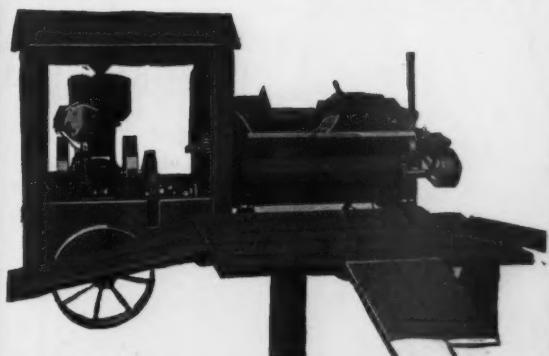
They are unlike any other made. The Patent Reverse Spiral Arrangement of the mixing blades is found only on the Blystone.

With this arrangement the batch is carried from one end of the drum to the other twice with every revolution of the shaft and shoveled over forty-four times each minute. The Blystone mixes successfully concrete, mortar, hardwall or the old-fashioned hair plaster.

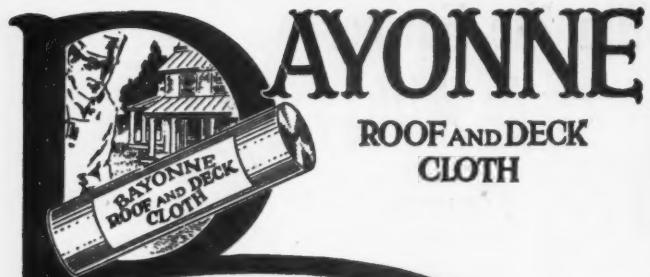
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BLYSTONE MANUFACTURING CO.

419 Carpenter St. Cambridge Springs, Pa.



F.D.Kees Mfg.Co.Beatrice,Nebr.



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These statements are endorsed by carpenters and builders throughout the country who have used BAYONNE.

Investigate BAYONNE ROOF AND DECK CLOTH and be convinced that it is superior to all other coverings for low pitched or flat roofs, for roofs and floors of piazzas, sun parlors, sleeping porches, conservatories, etc. It is laid on dry boards, it lays flat and stays flat, and is guaranteed waterproof.

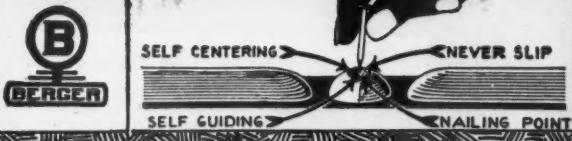
Write to the manufacturers for sample book "P" with directions for laying.

JOHN BOYLE & COMPANY, Inc.

Established 1860

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Branch House: 202-204 Market St., St. Louis, Mo.



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A corps of experienced engineers and specially trained draftsmen who give painstaking care to every detail of planning and erection, is back of every installation of



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The accuracy of "Classik" plates, the advantages of the Bead and Button construction and the clearness of Berger working drawings make erection an easy matter, even for the inexperienced.

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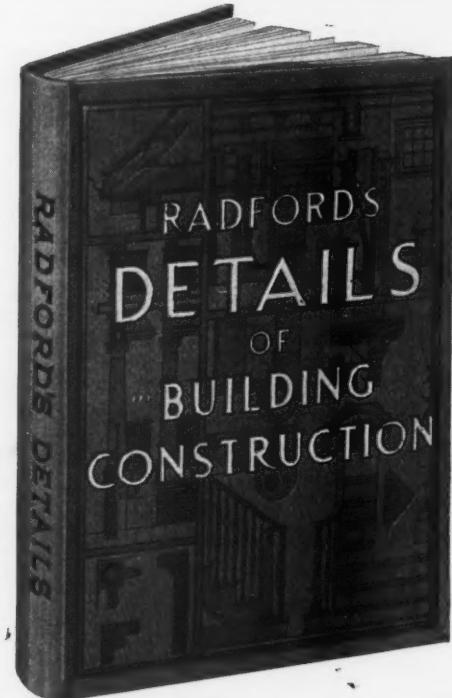
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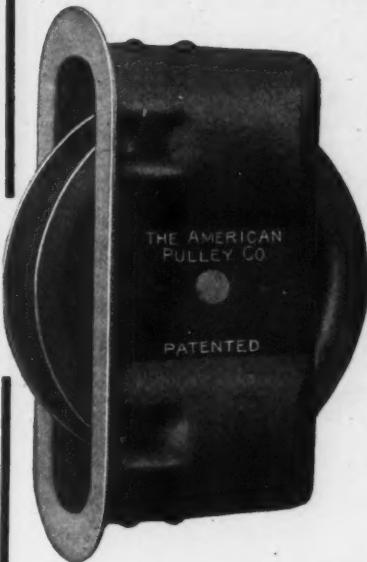
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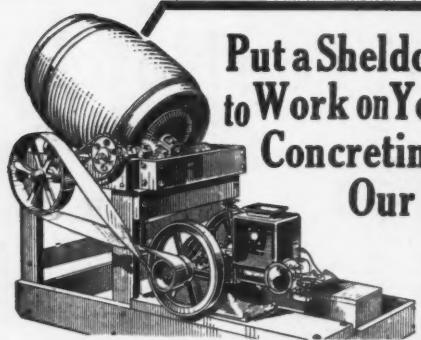
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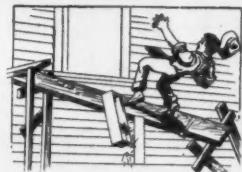
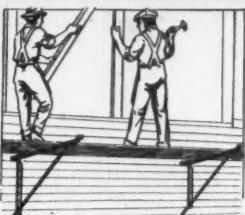
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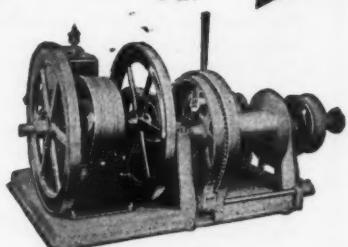
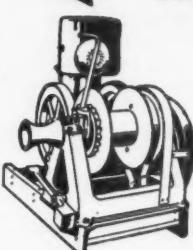
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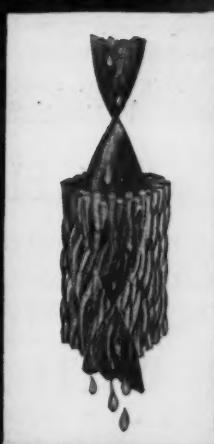
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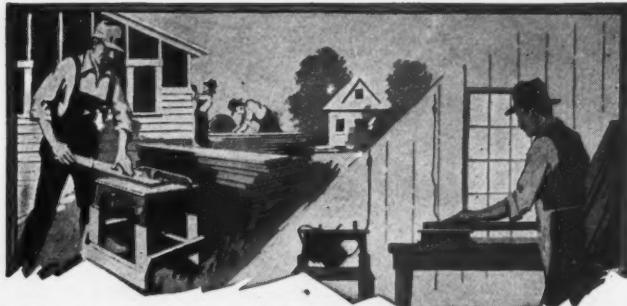


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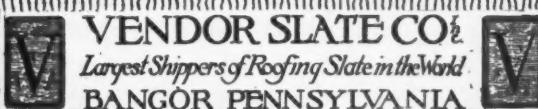
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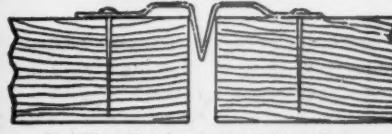


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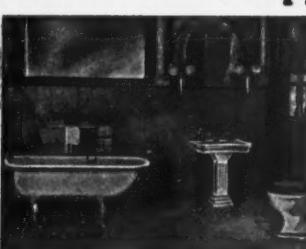


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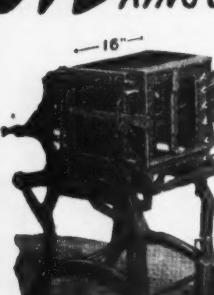
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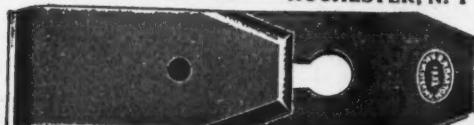
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Pat. 1912-1916



Pat. 1916



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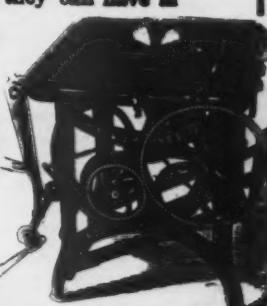
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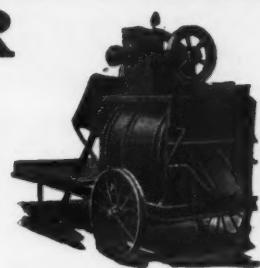
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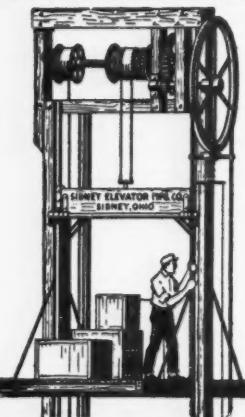
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SIDNEY ELEVATOR MFG. WORKS
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Great Bell PIPELESS FURNACE

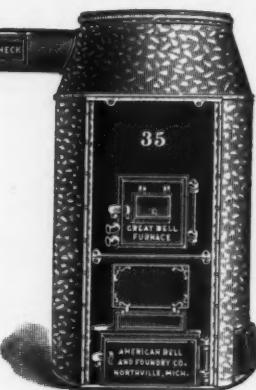
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Tasty, dignified designs characterize Hopson Metal Ceilings and sides. They're all easy to match and install.

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The chute is cast from the finest quality of iron, and can be had with either wire-glass or solid cast-iron door; it is neat and convenient, fire and burglar proof, and automatically locks whether open or closed.

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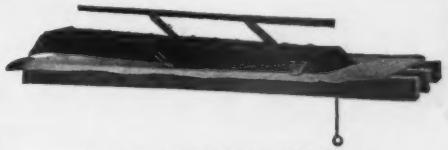
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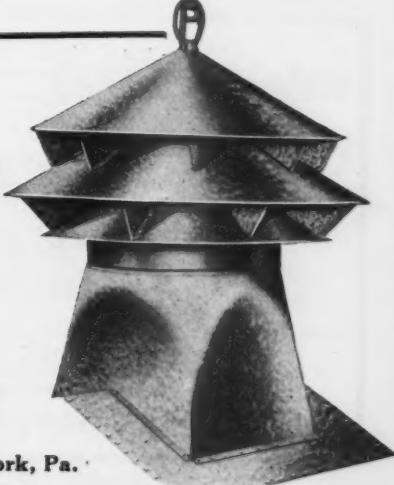
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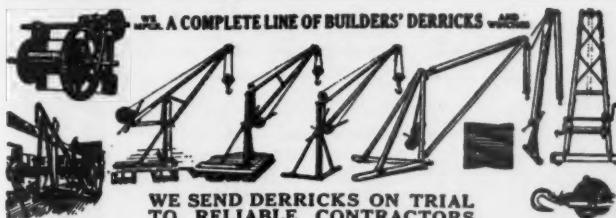
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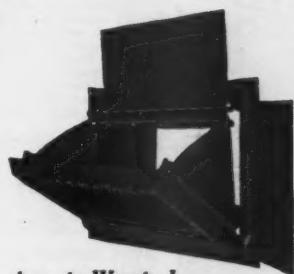
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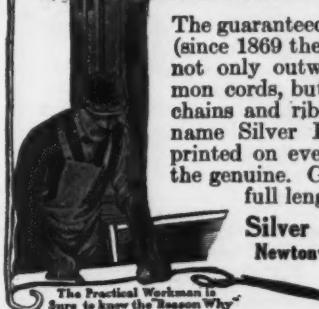
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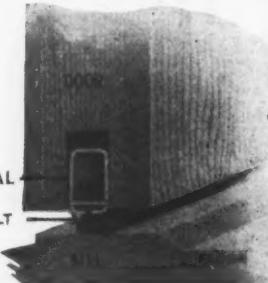
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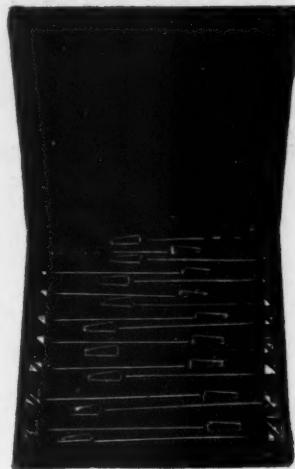
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They make a corner with the smoothness and neat appearance of a "mitred corner" and save the time and labor of beveling down the siding. Made of heavy galvanized steel. Fit any corner—inside or outside and make a smooth corner that does not hold dust or moisture. Cannot warp or split, and prevents warping of the siding.

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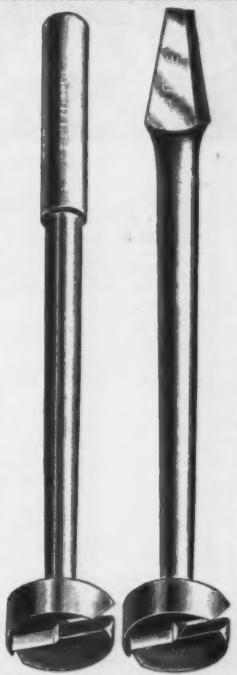
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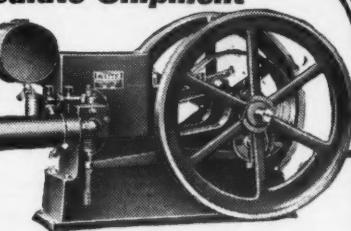
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Adds beauty and strength to Stucco.
An ideal facing aggregate.
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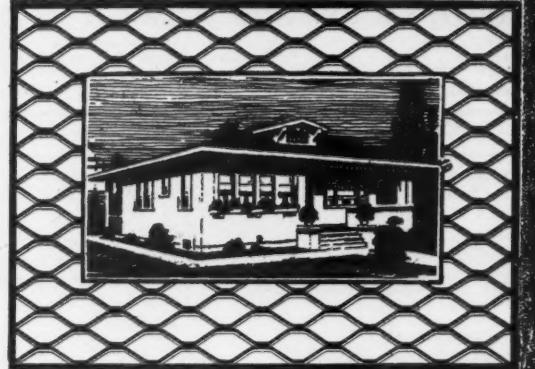
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